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FIVE-YEAR REVIEW REPORT

Second Five-Year Review

For the

Tansitor Electronics Inc. Superfund Site

Bennington

Bennington County, Vermont

September 2009

PREPARED BY:

United States Environmental Protection Agency
Region 1
Boston, Massachusetts

Approved by:

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Date: 9/23/09

ES EXECUTIVE SUMMARY

This is the second five-year review for the Tansitor Electronics Inc. Superfund Site (Site). This statutory five-year review is required since hazardous contamination remains at the Site above levels that allow for unlimited use and unrestricted exposure. The review was completed in accordance with EPA Guidance OSWER NO. 9355.7-03B-P.

Since the 1950's, various owners have used the Site as a manufacturing facility for electronic capacitors. Between 1956 and 1979, organic solvents and acids were disposed of in two areas of the property. During the period of 1975-1979, the process waste disposed included 1,1,1-trichloroethane (1,1,1-TCA) which is the predominant volatile organic compound (VOC) present in the groundwater. The site owner/operator, Vishay-Tansitor Electronics, Inc. (formerly Tansitor Electronics, Inc., hereafter, "Vishay-Tansitor") also reported that some waste detergents and dilute acid solutions may have been discharged into the two leach fields or directly into the intermittent stream north of its manufacturing building.

In May 1981, in compliance with Section 103(c) of the CERCLA, Vishay-Tansitor notified EPA of the waste disposal. Subsequent to the notification, the Vermont Agency of Natural Resources (VT ANR) performed site inspections and requested that Vishay-Tansitor initiate removal activities and implement a soil sampling and analysis program in the Disposal Area. On September 29, 1995, EPA issued a Record of Decision (ROD) which set forth the selected remedy for the Site. The major components of the selected remedy included institutional controls to prevent use of groundwater, long-term monitoring of site groundwater, contingencies for additional investigation or further action, and five-year reviews.

In addition, as part of the selected remedy, for a ten-acre portion of the Site, EPA waived the attainment of federal drinking water standards which are applicable or relevant and appropriate requirements (ARARs). EPA waived attainment of these ARARs on the basis that it was technically impracticable from an engineering perspective to restore groundwater to drinking water standards for this portion of the Site within a reasonable timeframe. This followed the State of Vermont's reclassification of the groundwater beneath the Technical Impracticability Zone (TI Zone) to non-potable use only.

The ROD did not include any source control component because EPA's risk assessment concluded that the surface and subsurface soils did not present an unacceptable risk either under current conditions or under a potential future residential scenario.

Pursuant to a Consent Decree, Vishay-Tansitor and Siemens Communication Systems, Inc. (the "Settling PRPs") recorded institutional controls and are performing the sampling program established in the ROD. Three of the contingencies for additional monitoring outlined in the ROD have been triggered by the groundwater monitoring data. As a result, sampling frequency was increased and a conceptual model evaluation plan and a phased bedrock monitoring plan were submitted and approved.

In September 1999, EPA deleted the Site from the National Priorities List, and, on December 3, 1999, VT ANR formally accepted lead agency responsibilities.

Based on the data reviewed, observations from the site inspection, and interviews, the remedy is functioning as intended by the ROD. Groundwater monitoring continues, maintenance of the wells is performed as necessary, and the effective implementation of institutional controls has thus far ensured the integrity of the remedy and prevented exposure to site groundwater.

The primary ARARs for groundwater beyond the Technical Impracticability Zone are MCLs and VT GWPRS. These standards continue to be met in the wells outside the TI Zone.

Land use at the Site has not changed since the 2004 five-year review and is not expected to change.

No current issues were raised by this five-year review. Four potential issues were identified that could affect the protectiveness of the remedy should site conditions change. However, it is unlikely that site conditions will change in the foreseeable future.

Five-Year Review Protectiveness Statement

Because the remedy selected for the Site is protective, the Site is protective of human health and the environment. Institutional controls have been recorded. The institutional controls have prevented exposure to site groundwater, thereby ensuring the Site remains protective of human health. In addition, Vermont reclassified the groundwater beneath the TI Zone to non-potable use only. Annual reports certify compliance with the institutional controls and the Vermont Groundwater Reclassification Order. Groundwater monitoring within the TI Zone has shown gradual reductions in concentrations of contaminants. Groundwater monitoring beneath and outside the TI zone has demonstrated that there continues to be no migration beyond the TI Zone or the Site. The monitoring program will continue to ensure that no migration beyond the TI Zone or the Site occurs. With respect to potential vapor intrusion within the manufacturing building, information provided by the facility indicates that the HVAC systems create an ongoing air exchange of 8 – 24 times per workday to address the use of solvents within the manufacturing process and soil vapor data levels were below OSHA time weighted average levels. As the contaminated groundwater is a potential vapor intrusion source, EPA will continue to evaluate this pathway in future reviews, particularly if land use of the Site changes.

Five-Year Review Summary Form

SITE IDENTIFICATION
Site name *(from WasteLAN)*: Tansitor Electronics, Inc. Superfund Site
EPA ID *(from WasteLAN)*: VTD000509174
Region: 1 State: VT City/County: Bennington/Bennington
SITE STATUS
NPL status: Deleted from NPL (9/29/99)
Remediation status: Complete
Multiple OUs?* No Construction completion date: July 1999
Has site been put into reuse? Not applicable (Vishay-Tansitor continues to use the site as a manufacturing facility)
REVIEW STATUS
Lead agency: EPA (for the review; otherwise VT ANR is the lead agency for the Site)
Author name: Terrence Connelly
Author title: Remedial Project Manager
Author affiliation: EPA Region I
Period for this review: 02/10/09 to 09/16/09 (Time period covered by this review, 2004 – 2009)
Date of site inspection: 04/30/09 Type of review: Post-SARA Review number: 2nd Triggering action: Implementation of Institutional Controls July 29, 1999 Triggering action date *(from WasteLAN)*: 09/30/04 (first FYR) Due date *(five years after triggering action date)*: 09/30/09 * "OU" refers to operable unit.
ISSUES: No current issues were identified in this review.

This five-year review identified four potential future issues were site conditions to change:

- reassessment of the 1,4-dioxane toxicity value
- vapor intrusion pathway
- institutional controls, and
- viability of the monitoring wells.

The 2004 FYR identified the potential presence of 1,4-dioxane and potential indoor air impact from a vapor intrusion pathway. These were addressed in 2005 through additional analysis.

Based on the current use of solvents in the manufacturing operations, the presence of the slab foundation, and the intake of ambient air through the facility's HVAC system, EPA and VT ANR consider any contribution to indoor air from the historical source release would likely be minimal relative to the ongoing activities. If there is any change in future use of the facility, there will be a need to re-evaluate the indoor air pathway and the institutional controls.

RECOMMENDATIONS and FOLLOW-UP ACTIONS:

- re-evaluate the 1,4-dioxane data when EPA completes the toxicity reassessment (no date has been scheduled for completing the reassessment)
- monitor land use at the Site relative to the vapor intrusion pathway
- monitor land use at the Site relative to the institutional controls, and
- develop a process to address long-term viability of the monitoring wells.

PROTECTIVENESS STATEMENT:

Because the remedy selected for the Site is protective, the Site is protective of human health and the environment. Institutional controls have been recorded. The institutional controls prevent exposure to site groundwater ensuring the Site remains protective of human health. In addition, Vermont reclassified the groundwater beneath the TI Zone to non-potable use only. Annual reports certify compliance with the institutional controls and the Vermont Reclassification Order. Groundwater monitoring within the TI zone has shown gradual reductions in concentrations of concern. Groundwater monitoring beneath and outside the TI zone has demonstrated that there continues to be no migration beyond the TI zone or the Site. The monitoring program will continue to ensure that no migration beyond the TI zone or the Site occurs.

Although EPA does not consider the indoor migration pathway from the historic source release to be complete for the current land use scenario, should future land use change, there would be a need to re-evaluate the indoor air pathway at that time. EPA will continue to monitor land use in future reviews.

OTHER COMMENTS: None

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FIVE-YEAR REVIEW

1.0 INTRODUCTION

The purpose of this five-year review is to determine if the remedy selected for the Tansitor Electronics, Inc. Superfund Site (Site) in Bennington, Vermont, is protective of human health and the environment. This report summarizes the five-year review process, investigations and remedial actions undertaken at the Site; evaluates the monitoring data collected; reviews the Applicable or Relevant and Appropriate Requirements (ARARs) specified in the Record of Decision (ROD) for changes; discusses any issues identified during the review; and presents recommendations to address these issues.

The United States Environmental Protection Agency, Region 1 (EPA) prepared this five-year review pursuant to the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) §121 and the National Contingency Plan. CERCLA §121 states:

> "If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."

The EPA interpreted this requirement further in the National Contingency Plan; 40 CFR §300.430(f)(4)(ii) states:

> "If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action."

This is the second five-year review for the Site. This statutory five-year review is required since hazardous contamination remains at the Site above levels that allow for unlimited use and unrestricted exposure. The triggering action for the initial statutory review was initiation of the remedial action. An environmental easement and declaration of restrictive covenants were recorded on the site property on July 30, 1999. A groundwater monitoring program, begun in 1994 during the RI/FS, has continued under a Consent Decree. Following a public comment period, EPA deleted the Site from the National Priorities List in September 1999 and VT ANR assumed the lead agency responsibility in December 1999.

Work on this review was performed between February and September 2009. The review was completed in accordance with EPA Guidance OSWER NO. 9355.7-03B-P.

2.0 SITE CHRONOLOGY

CHRONOLOGY OF SITE EVENTS

EVENT	DATE
Property occupied by a farm, then a trucking company that had a two-bay garage building.	Pre-1956
Beginning in 1956, various owners have used the Site as a manufacturing facility for electronic capacitors.	1956 - current
Vishay-Tansitor Electronics, Inc. (formerly Tansitor Electronics, Inc., hereafter "Vishay-Tansitor") notifies EPA that organic solvents and acids had been disposed of onsite between 1956 and 1979. During the period of 1975-1979, the process waste included 1,1,1-TCA, the predominant VOC present in the groundwater.	May 1981
Subsequent to the notification, VT ANR performed site inspections and requested that Vishay-Tansitor initiate removal activities and implement a soil sampling and analysis program in the Disposal Area.	1983 - 1987
VOCs were detected in overburden groundwater between the Disposal Area and the Fire Pond. VOCs also were detected in surface water samples from the on-site intermittent stream and the perennial stream south of Route 9.	1988
EPA placed the Site on the National Priorities List.	October 4, 1989
EPA notified seven parties, the current and former owners of the Site, of their potential liability with respect to the Site.	March 1989 to May 1990
Negotiations commenced with these potentially responsible parties (PRPs).	May 11, 1990
Two PRPs (Vishay-Tansitor and Siemens Communication Systems, Inc.) (hereafter, the "Settling PRPs") enter into Administrative Order by Consent (AOC) with EPA and under EPA oversight commenced an RI/FS for the Site.	September 12, 1990
EPA issued a community relations plan (the starting point of community involvement). The following month, EPA conducted interviews with city officials, nearby residents, and interested parties.	October 1990
VT ANR issued a Groundwater Reclassification Order in response to a Vishay-Tansitor petition. This Order changed the classification from Class III to Class IV for the groundwater beneath the TI Zone.	November 23, 1993
Settling PRPs completed and EPA issued an RI Report.	June 10, 1994
Settling PRPs completed and EPA issued an FS Report.	February 13, 1995
EPA published notice of the completion of the FS and the proposed plan for remedial action in the Bennington Banner, the major local newspaper of	February 27, 1995

general circulation.	
EPA issued a ROD with State concurrence describing the remedial action to be implemented at the Site. The ROD included a technical impracticability waiver for MCLs for a ten acre area of the Site.	September 29, 1995
EPA begins Consent Decree negotiations after giving opportunity to VT ANR and Natural Resource Trustees to participate in the negotiations.	February 1997
ROD Contingencies #1 and #4 triggered for MW-104M and MW-112M.	October 1998
U.S. District Court enters Consent Decree, under which Settling PRPs agree to perform the remedy.	March 24, 1999
Restrictive Covenant recorded on Vishay-Tansitor deed at the Bennington County Registry of Deeds.	July 30, 1999
EPA published in the Federal Register a Notification of Intent to Delete (NOID) the Site from NPL.	August 1999
Deletion of the Site from NPL recorded in the Federal Register	September 29, 1999
VT ANR accepts lead agency responsibility from EPA.	December 3, 1999
ROD Contingency #5 triggered for MW-112M.	January 2002
First Five-Year Review.	September 2004
Long-term monitoring (which began in 1994) continues	2004 – 2009

3.0 BACKGROUND

3.1 Physical Characteristics

The Site consists of approximately 44 acres of land on West Road (Route 9) in the Town of Bennington, Vermont, and is approximately 3.5 miles west of Bennington Center (see Figure 1). Most of the Site (37.6 acres) is located to the north of Route 9, with the remainder of the Site (6.6 acres) located to the south of Route 9. The portion of the Site located to the south of Route 9 consists of forested wetlands and there are also wetlands on the property north of Route 9.

The general topography surrounding the Site consists of rolling hills oriented north-south between the Green and Taconic Mountains. The Site lies at the southeastern portion of the base of Whipstock Hill. Elevations at the Site and close vicinity generally decrease to the south. Groundwater flow direction at the Site generally mimics surface contours.

Surficial runoff from the Site (storm water, snow melt and from groundwater seeps) drains into the Fire Pond, an intermittent stream located onsite, and the facility storm drain system, and ultimately into the wetland area south of Route 9. An unnamed east-west flowing perennial stream, located south of Route 9, enters the Site from the east and flows through these wetlands into Browns Brook, a Class B surface water body located about one-half mile offsite. Brown Brook flows into the Hoosic River another three to four miles downstream.

Glacial activity has greatly influenced the geology and hydrogeology in the vicinity of the Site. To the north is the Whipstock Hill drumlin, which controls the surface water and groundwater flow directions across and beneath the Site. Underlying the Site is approximately 180 feet of glacial till, a mixture of dense deposits of silty clay, clayey silt, silt, and fine to coarse sand and gravel.

The till can be further divided into three units: ablation till, present from the ground surface to about 35 feet; a silty sand basal till about 15 feet thick; and a silty clay basal till approximately 130 feet thick. The till overlies bedrock which is comprised of variably fractured limestone under the southern portion of the Site and phyllite under the northern portion.

3.2 Land and Resource Use

The Site is located in an area zoned Rural Conservation with a commercial corridor overlay along Route 9. As a manufacturing facility, Vishay-Tansitor's industrial use of the Site represents a grandfathered non-conforming use under the zoning regulations. The Site is bounded to the north by privately owned woodland; to the east by Houran Road and a commercial property; to the south by wetlands; and to the west by agricultural/residential areas. Pleasant Valley School is located approximately 1,200 feet east and topographically upgradient of the Site.

Since issuance of the ROD and through the date of this five-year review, Vishay-Tansitor has continued to manufacture electronic capacitors at the Site. Major site features include Vishay-Tansitor's operating manufacturing/office building, an Etch House, a man-made pond (known as the Fire Pond), parking areas, a Solid Waste Disposal Area, a Disposal Area, a Concrete Pad Area, and a Borrow Area (see Figure 2). As discussed below, there have been no changes in land use at the Site or the surrounding community since issuance of the ROD.

Potable water supplies for the surrounding properties, as well as the water supply on the Site, are provided by private bedrock wells. Prior to 1993, the aquifer beneath and in the vicinity of the Site was classified by VT ANR as Class III, which is defined as suitable as a source of water for individual domestic drinking water supply, irrigation, agricultural use, and general industrial and commercial use. However, in response to a petition from Vishay-Tansitor that was based on the data obtained during the RI, on November 23, 1993, VT ANR issued a Groundwater Reclassification Order that reclassified groundwater beneath a 9.6 acre area of the Site, where groundwater contamination was detected, from Class III to Class IV. Class IV groundwater is defined as not suitable as a source of potable water but suitable for some agricultural, industrial and commercial use. This Reclassification Order was modified on March 10, 1994 to allow for a trained Vishay-Tansitor employee, approved by VT ANR, to conduct and report the monitoring. See Appendix B for the Reclassification Order.

Subsequent to the issuance of the ROD and through the date of this five-year review, sanitary waste water from the Vishay-Tansitor facility has been disposed of into the Town of Bennington public sewer system.

Also subsequent to the issuance of the ROD, the facility on its own discontinued use of its production well as its drinking water source. The facility relies on bottled water for drinking water, but continues to use its production well for process water in its manufacturing of electrical components.

3.3 History of Contamination

The record indicates that prior to 1956 a trucking company occupied the property and had a two-bay garage building. Prior to the trucking company operation, the property was farmland.

Since 1956, various owners have used the Site as a manufacturing facility for electronic capacitors. In May 1981, in compliance with Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9603(c), Vishay-Tansitor notified EPA that organic solvents and acids had been disposed of on-site between 1956 and 1979. Over that period, the estimated equivalent of 117 drums of process waste were disposed of in a 900-square foot area to the north of the Vishay-Tansitor manufacturing building (referred to throughout this five-year review as the “Disposal Area”). During the period of 1975-1979, the process waste disposed in the Disposal Area included 1,1,1-TCA which is the predominant VOC present in the groundwater. Vishay-Tansitor also reported that some waste detergents and dilute acid solutions may have been discharged into the two leach fields (now out of service with the extension and connection to the public sanitary sewer system in 2001) or directly into the intermittent stream north of its manufacturing building. Finally, Vishay-Tansitor reported that waste methanol had been burned periodically on the Concrete Pad.

3.4 Initial Response

Following the 1981 notification to EPA of hazardous waste disposal activities, VT ANR instructed Vishay-Tansitor to restrict access to the Fire Pond and disposal areas; define the areal and vertical extent of contaminated soil at the Disposal Area; remove the contaminated soil for proper disposal at a certified hazardous waste facility; design and implement an evaluation and

monitoring program to determine the magnitude and extent of contamination resulting from the Site; and determine potential remedial actions.

In 1988, Vishay-Tansitor hired a contractor to perform the site investigation requested by VT ANR. During this investigation, VOCs were detected in overburden groundwater samples from three monitoring wells located between the Disposal Area and the Fire Pond. No VOCs were detected in one monitoring well upgradient of the Disposal Area or in two monitoring wells south of the Fire Pond. However, surface water samples from the on-site intermittent stream and the perennial stream south of Route 9 did reveal VOC contamination.

3.5 Basis for Taking Action

Pursuant to an Administrative Order by Consent effective September 12, 1990, the Settling PRPs commenced a Remedial Investigation and Feasibility Study (RI/FS) for the Site under EPA oversight. The Settling PRPs completed and EPA issued an RI Report on June 10, 1994, and the Settling PRPs completed and EPA issued an FS Report on February 13, 1995.

The RI found that there were two distinct source areas of VOCs detected at the Site, the Disposal Area and Concrete Pad Area. Areal extent of the Disposal Area is approximately 900 square feet; areal extent of the Concrete Pad Area is approximately 400 square feet.

Disposal Area soils contained low levels of VOCs, and elevated levels of silver and nickel. The highest concentrations of VOCs were found in soils at a depth of seven to eight feet below the ground surface. No dense non-aqueous phase liquids (DNAPLs) were found in the soils in this area, and the VOC concentrations found in the unsaturated soils did not suggest the presence of DNAPLs.

Concrete Pad Area soils also contained low levels of VOCs. The highest concentrations of VOCs were detected in soils at a depth of 10 to 15 feet below the ground surface. No evidence of DNAPLs was observed in these soils.

Semi-volatile organics were sporadically detected in samples from the Site. The occurrence of these compounds was attributed to the combustion by-products of fossil fuels and runoff from road surfaces. These compounds did not appear to be related to past or current production or wastewater disposal processes at the facility.

The RI identified two significant plumes or zones of VOC contamination in shallow groundwater. The first plume originates from the Disposal Area and extends to the Fire Pond, impacting an area approximately 170 feet by 260 feet, or slightly more than an acre. Based on soil gas analyses and groundwater analytical data, it appeared that the plume did not exceed the width of the Fire Pond.

Contaminants detected throughout the Disposal Area plume above federal drinking water standards, Maximum Contaminant Levels (MCLs), included 1,1,1-TCA and 1,1-dichloroethylene (1,1-DCE). The highest concentration of 1,1,1-TCA detected was 470,000 parts per billion (ppb) (MCL of 200 ppb); the highest concentration of 1,1-DCE detected was 3,800 ppb (MCL of 7 ppb). Unlike the soils, with the 1,1,1-TCA concentration well above the solubility limit associated with DNAPL, this suggested that groundwater contamination may be present in DNAPL form. These concentrations were both detected in well ERM-2S.

The other significant plume originated from under the Concrete Pad Area, impacting an area approximately 60 feet by 240 feet, or about one-third of an acre. VOCs were detected above their MCLs at sampling location MW-108U. The highest concentrations detected were as follows: 1,1,1-TCA, 2000 ppb; 1,1-DCE, 180 ppb; trichloroethylene, 19 ppb (MCL of 5 ppb); and tetrachloroethylene, 20 ppb (MCL of 5 ppb).

On February 27, 1995, EPA published notice of the completion of the FS and the proposed plan for remedial action on February 27, 1995, in the Bennington Banner, the major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action.

On September 29, 1995, with concurrence from VT ANR, the ROD was signed. The ROD set forth a limited remedy for the Site that combined institutional controls, groundwater (and surface water if necessary) monitoring with contingencies for further investigation or further action, and five-year reviews. The primary contaminants of concern (COCs) affecting on-site soil, groundwater, surface water and/or sediment were determined to be VOCs.

4.0 REMEDIAL ACTIONS

This section describes the remedial actions selected for and implemented at the Site.

4.1 Remedy Selection

The September 29, 1995 ROD for the Site specified a multi-component remedy to address groundwater contamination. Based on the RI, remedial action objectives were identified for the Site:

- Eliminate or minimize the threat posed to human health and the environment by preventing exposure to groundwater contaminants by any individual who may use the groundwater within the area of the shallow plumes or within an area where groundwater could become contaminated as a result of pumping activities;
- Prevent the migration of groundwater contamination beyond its current extent, or to monitor the groundwater to ensure that contamination is not migrating beyond its current extent; and
- If technically practicable, to restore contaminated groundwater to drinking water standards, and to a level that is protective of human health and the environment.

The remedy selected in the ROD specified:

- Institutional controls to prevent the use of contaminated groundwater and to inform future purchasers of property of the groundwater restrictions associated with the property;
- Long-term monitoring of site groundwater on a regular basis to evaluate changes in site conditions over time;
- Contingencies for future additional investigation or further action should the long-term monitoring reveal that contaminants have migrated beyond their vertical or horizontal extent at the time of the ROD; and
- Review of the Site every five years to ensure that the remedy remains protective of human health and the environment.

In addition to these components of the remedy, EPA waived chemical-specific ARARs for a 9.6-acre portion of the Site. This area, designated as the Technical Impracticability Zone (TI Zone), has the same surficial dimensions as the Class IV zone established in the November 1993 Vermont Groundwater Reclassification Order (and modified in February 1994). Unlike the Class IV area, the TI Zone also has a vertical dimension and that extends to the bedrock surface. As more fully explained in the ROD, the site geology and hydrology that limited the spreading of the contamination also made restoration through an engineering approach impracticable, and thus EPA determined that it would be technically impracticable to attain groundwater standards within a reasonable period of time. See Figure 2 for the TI Zone/Class IV boundary.

Institutional controls were to be established to prevent the use of groundwater impacted by the Site and to inform future purchasers of the property of the groundwater restrictions associated with the property. These institutional controls were to consist of deed restrictions to provide

permanent, enforceable restrictions on the use of groundwater at the Site. The Vermont Groundwater Reclassification Order would also serve to restrict use of the Site groundwater.

The deed restrictions were to provide the following:

(1) No water supply well was to be installed in either the overburden soils or bedrock within the area designated as a Class IV Groundwater Area by the State of Vermont (marked generally by MW-107U in the northeast, the Eastern Leach Field in the southeast, MW109U in the southwest, and the Water Reservoir in the northwest).

(2) No water supply well was to be installed in either the overburden soils or bedrock within the Class III Area on the Vishay-Tansitor property without prior EPA approval. At the time of the ROD (and continuing to this day), Vishay-Tansitor's operating facility was drawing its process water from a bedrock well located west of the Class IV area. EPA acknowledged that either the current owner or potential future owners of the property may need or desire another source of water outside the Class IV Area at some time in the future because of possible failure of the existing well or development on other parts of the property. Because the addition of a new well, however, could cause contaminants to migrate or otherwise affect the contaminant plumes, EPA would require for any proposal for a new well a demonstration that such an action would not induce movement of the contaminants into uncontaminated areas. This demonstration would include, at a minimum, pump tests and laboratory analysis for VOCs. Should the demonstration indicate the proposed well would have an adverse affect on the plume, as determined by EPA, it would not be installed. It was (and is) not the intent of EPA to preclude the use of other areas of the Site with this requirement, rather it was (and is) to ensure that the institutional controls and monitoring remain protective and that further migration is prevented.

In the event that new water supply wells are installed with EPA approval in the future, additional monitoring positions located between the contaminant plume and the new water supply well may be required. These positions would be used to monitor for possible changes in on-site groundwater flow patterns (as it affects contaminant distribution). The water level monitoring program would be accomplished through the periodic use of continuous recorders on selected monitoring wells during seasonal low water periods.

(3) The existing production well located at the Tansitor Site would not be used to extract more than 20,000 gallons of water per day, without prior EPA approval, as increased use of groundwater at and in the vicinity of the plumes could adversely affect the plumes. Therefore, if use and pumping of the current well were to be proposed beyond the level of the RI pump test, which was approximately 20,000 gallons per day, a determination would be made by EPA as to the potential impact on the plumes.

(4) The TI Zone would be used solely for industrial and commercial purposes, unless other uses of the TI Zone were approved by EPA.

(5) No excavation or construction activities that would disturb the soil within the TI Zone would be undertaken without EPA approval.

(6) All of the above-listed restrictions were to remain in effect as long as contaminated groundwater is present at the Site at levels in excess of federal drinking water standards, and at levels that are not protective of human health and the environment.

With respect to the State or local requirements, as noted above, the State of Vermont reclassified the groundwater in the area of the contaminated plumes from Class III to Class IV groundwater. Class IV groundwater under the state classification system is considered not suitable as a source of potable water but suitable for some agricultural, industrial, or commercial use. In addition, the Reclassification Order stated that a review of the monitoring data be performed by VT ANR after five years of monitoring, and possibly thereafter for successive five-year intervals. While VT ANR took this action independently of EPA, EPA believed that the reclassification, together with institutional controls described above, would effectively prevent future exposure to contaminated groundwater at the Tansitor Site.

The ROD-specified monitoring program was to be implemented to demonstrate that the conceptual model presented was correct, i.e., that the contaminants are not migrating horizontally beyond the Fire Pond or vertically toward the bedrock. The monitoring was also be used to evaluate the overall protectiveness of the remedy. The groundwater monitoring program was to include sampling and analytical methods that were appropriate for groundwater sampling and that accurately measure hazardous constituents in the samples. Monitoring was to be performed in wells located at and around the property boundary and within the interior of the Site to monitor the levels, distribution, and migration of VOCs, silver, and lead. Monitoring was also to include water level measurements.

Groundwater monitoring for VOCs was to be conducted semi-annually in the spring and fall for a period of at least five years. EPA concurred with VT ANR regarding the sampling locations, frequency, and analytes for the groundwater monitoring required by the November 1993 Vermont Groundwater Reclassification Order. Therefore, the monitoring data collected in accordance with the Reclassification Order were deemed suitable as part of the semi-annual monitoring required by the ROD.

Groundwater monitoring for silver and lead was to be conducted semi-annually in the spring and fall for a period of at least three years. As with the VOCs, monitoring data for silver and lead collected in accordance with the Reclassification Order prior to the ROD were deemed suitable for this monitoring. The monitoring program was to include selected groundwater monitoring wells. To evaluate the vertical extent of the contaminant plume, the following existing medium depth and bedrock wells were to be included in all semi-annual monitoring: MW-101M, MW-112M, MW-104M, MW-105M, MW-103M, ERM-5D, and MW-103R. To evaluate the horizontal extent of the contaminant plumes, the following existing shallow wells were to be included in all semi-annual monitoring: ERM-2S, MW-104U, ERM-4S, MW-108U, ERM-5S, MW-109U, MW-110U, MW-114U and MW-ELF.

After five years, as determined by EPA, the frequency and list of analytes monitored in the groundwater (and surface water if applicable) would be evaluated and possibly reduced, in accordance with relevant and appropriate RCRA groundwater monitoring standards. Subsequent to the initial reassessment, the duration and scope of monitoring activities would be reassessed periodically based on sampling results and observed trends. At a minimum, these reassessments

would occur during each five-year site review.

Finally, all monitoring reports were to include documentation detailing the level of use of the existing water supply well at the Site, consistent with the requirement that this well would not be used to extract more than 20,000 gallons of water per day.

The ROD established contingencies in the event that wells outside the current contaminant plumes become impacted. These contingencies for future action would be triggered in the event that contamination above specified levels was detected in the existing monitoring wells.

The contingencies were ordered in terms of depth, beginning with shallow wells and moving down to bedrock. This appeared to be the most likely sequence for detection of contaminants, should migration occur from the current plumes. With each contingency, an evaluation of the field sampling and analytical methods would be performed in the event of detection of a contaminant of concern. The monitoring well in question would be resampled if the review indicated the methods did not meet data quality objectives. If the evaluation indicated the detection was valid, the frequency of sampling for the appropriate well or wells would be increased to quarterly for overburden wells and monthly for bedrock wells to characterize seasonal fluctuations and migration trends.

For each contingency, the concentrations of contaminants were to be compared to their respective and applicable standard: MCLs, non-zero MCLGs, or Vermont drinking water standards where more stringent (VT GWPRS are applicable at the Class III/IV boundary), or health-based levels if the contaminant has no promulgated standard.

The final component of the ROD remedy was five-year reviews. Because contaminants would remain onsite that would not allow unrestricted use of the property, EPA would review the Site at least once every five years after the initiation of the remedial action at the Site to assure that the remedial action continues to be protective of human health and the environment.

4.2 Remedy Implementation

This section describes the implementation of the components of the remedy specified in the 1995 ROD.

4.2.1 Institutional Controls

Following the entry of the Consent Decree in March 1999, the Settling PRPs submitted a draft Environmental Protection Easement and Declaration of Restrictive Covenants to EPA and VT ANR. This document was approved by EPA and then recorded July 30, 1999 on the property deed at the Town Clerk's Office for the Town of Bennington, Bennington County. The covenants included the restrictions listed above in Section 4.1.

4.2.2 Groundwater Monitoring

The ROD required the implementation of a semi-annual groundwater monitoring program for at least five years. If the action levels established by the ROD were exceeded, the ROD required further evaluation of the remedial action via contingencies described in the ROD. The ROD

established a three-dimensional Technical Impracticability Zone where drinking water standards were waived. Outside the TI Zone, drinking water standards were set as the action levels, or standards, for all groundwater contaminants.

EPA determined that the groundwater monitoring collected in accordance with the Vermont Groundwater Reclassification Order was deemed suitable for the semi-annual monitoring required in the ROD. Pursuant to the November 1993 Reclassification Order, beginning in May 1994, twelve monitoring wells were sampled for VOCs, and silver and lead. Pursuant to the September 1995 ROD, beginning in October 1995 an additional four monitoring wells were included in the semi-annual sampling. The results for the wells within the TI Zone were then compared to the contingencies established in the ROD and the wells outside the TI Zone (both outside it laterally and also those beneath it) were compared to federal or state drinking water standards. The results of the selected sampling events are discussed in Section 6.4.3.

Following the completion of the fall 1998 sampling event, the groundwater monitoring program was adjusted so that the sampling frequency of MW-104M and MW-112M was increased to quarterly beginning in January 1999, as a result of periodic exceedances of Contingencies #1 and #4 (see below). In addition, sampling for silver and lead was discontinued, with the exception of lead in ERM-5S.

Subsequent to this, MW-112U was added to the groundwater monitoring program in January 2000.

Following a review of the data by the Vermont Groundwater Coordinating Committee in connection with the five-year review period established in the Groundwater Reclassification Order, VT ANR notified Tansitor on September 5, 2001 that lead was not present above groundwater quality enforcement standards and therefore, the sampling of ERM-5S for lead could be discontinued.

Contingency #5 was triggered for MW-112M after the fall 2001 sampling event. As a result, the frequency of monitoring of the MW-105M and the Vishay-Tansitor production well sampling was increased to quarterly.

4.2.3 Contingencies

The 1995 ROD established six contingencies in the event that wells outside the contaminant plumes at the time of ROD later became impacted. These were later expanded to eight contingencies in the Statement of Work, Appendix I to the Consent Decree, to include a new water supply well proposal and associated work plans. Contingencies 1, 4, and 5 have been triggered and discussed further below.

Contingency #1 of the SOW would be triggered if concentrations of 1,1,1-TCA or 1,1-DCE or any other contaminants were detected at or above one half their respective standard in monitoring wells beyond the extent of the plumes at the time of the ROD (i.e., in wells 101M, 104M, 105M, 103M, ERM-5D, ERM-4S, ERM-5S, 109U, 110U, and 114U). Contingency #1 was triggered in MW-104M for 1,1-DCE in the fall 1996 sampling round. Quarterly sampling of this well began in January 1999.

Contingency #4 of the SOW would be triggered if concentrations of 1,1,1-TCA or 1,1-DCE or any other contaminants were detected at or above their respective standard in any of the medium depth monitoring wells, 101M, 112M, 104M, 105M, 103M, or ERM-5D. Contingency #4 was triggered in MW-104M and MW-112M for 1,1-DCE in the fall 1998 sampling round and the Settling PRPs submitted to EPA and VT ANR a Conceptual Model Evaluation Plan. Quarterly sampling of both wells began in January 1999 and the Conceptual Model Evaluation Plan was submitted and approved in the spring of 1999.

Contingency #5 of the SOW, if concentrations of 1,1,1-TCA or 1,1-DCE or any other contaminants were detected at or above five times their respective standard for four consecutive quarters in any of the medium depth compliance monitoring wells, 101M, 112M, 104M, 105M, 103M, or ERM-5D, the Settling PRPs were to submit to EPA and VT DEC a Bedrock Monitoring Plan which would include a plan and schedule for selection, construction and monitoring for additional monitoring wells to determine the vertical extent of the plume. This contingency was triggered in MW-112M for 1,1-DCE in the fall 2001 sampling round. At a meeting on November 16, 2001 between VT ANR, EPA, and the Settling PRPs agreed to initiate a phased approach to the bedrock monitoring plan. Sampling of the Tansitor production well and MW-105M would be increased to quarterly and further assessment of the MW-112M data would be undertaken to determine whether additional medium depth wells would be needed.

4.3 Systems Operation/O&M

The ROD estimated net present worth O&M annual costs at $30,600 for thirty years of operation, primarily for the semi-annual sampling and reporting. As the selected remedy relied on institutional controls and monitoring, neither the ROD nor the 1995 Consent Decree established any specific operation and maintenance requirements. The Settling PRPs have maintained the monitoring wells as part of the regular facility grounds maintenance.

Annual Long-Term Monitoring Costs

Year	Total Cost rounded to nearest $1,000	
	Contractor/Laboratory	EPA Regulatory Oversight*
2004	$24,000	NA
2005	$16,000	$6,000
2006	$23,000	NA
2007	$20,000	NA
2008	$17,000	NA

* In the 1999 Consent Decree, EPA waived its first $40,000 of oversight costs. To date, that figure has not been reached. The 2005 figure represents the costs of the first five-year review that was completed in-house.

On September 15, 1999, EPA and VT ANR conducted a pre-certification site inspection pursuant to the Consent Decree, Section XIV, Certification of Completion. Subsequently, the Settling PRPs' consultant, GZA GeoEnvironmental Inc., submitted a Report of Completion of Remedial Action in October 1999. On November 10, 1999, EPA approved the report and certified that Completion of Remedial Action had been completed consistent with Consent Decree requirements.

5.0 PROGRESS SINCE LAST FIVE-YEAR REVIEW

This is the second five-year review for the Site. The first five-year review, completed by EPA in 2004, concluded that because the remedial actions implemented for the Site were protective, the Site was protective of human health and the environment. Institutional controls had been recorded. The institutional controls prevented exposure to site groundwater, thereby ensuring the Site remains protective of human health. In addition, Vermont reclassified the groundwater beneath the TI Zone to non-potable use only. Annual reports certified compliance with the institutional controls and the Vermont Groundwater Reclassification Order. Groundwater monitoring within the TI Zone showed gradual reductions in concentrations of contaminants. Groundwater monitoring beneath and outside the TI Zone demonstrated that there was no migration beyond the TI Zone or the Site. The monitoring program would continue to ensure that no migration beyond the TI Zone or the Site is occurring.

The 2004 Five-Year Review identified three issues:

- The potential presence of 1,4-dioxane (reported to be commonly used as a stabilizer for 1,1,1-TCA) needs to be evaluated, particularly as it is more soluble than 1,1,1-TCA and therefore may have moved farther from the release area.

- EPA has released a draft guidance on vapor intrusion pathway. Although this guidance is not expected to be used for settings that are primarily occupational, it recommends that the facility be alerted to the potential of this exposure pathway and consider any potential risks that may result.

- Given the extensive groundwater data set accumulated since the ROD, and the hydrologic conditions present at the Site, it may be appropriate to reassess the sampling frequency.

Consequently, the 2004 Five-Year Review made the following recommendations:

- Add 1,4-dioxane to the groundwater monitoring program to determine its presence, and if present, its distribution on the Site. If it is present and has a similar distribution of the other contaminants of concern, then add it to the long-term monitoring program.

- Discuss the vapor intrusion pathway with the facility.

- Reassess the frequency of sampling based on the conceptual site model.

Actions Taken Since the Last Five-Year Review

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Potential presence of 1,4-dioxane	Add 1,4-dioxane to the monitoring plan	PRPs	Fall 2004	1,4-dioxane added to monitoring plan	Spring 2005
Potential vapor intrusion into building	Discuss pathway with facility	EPA	Fall 2004	PRPs compared RI soil vapor data with OSHA 8-hr TWA standards	Fall 2004
Reassess long-term monitoring plan	Reassess the sampling plan based on the Conceptual Site Model	PRPs/VTANR	Fall 2004	Long-Term Monitoring Plan modified	September 2005

6.0 FIVE-YEAR REVIEW PROCESS

6.1 Administrative Components

EPA, the lead agency for this five-year review, notified VT ANR in February 2009 that the five-year review would be completed. Michael Smith of VT ANR was part of the review team.

The schedule established by EPA included completion of the review by September 2009.

6.2 Community Notification and Involvement

For this five-year review EPA prepared a public notice for the local paper announcing the five-year review and requesting public participation. The public notice was published in the Bennington Banner on July 16, 2009. There has been no response from the public to either the VT ANR or EPA regarding the five-year review.

In the initial stages of the Superfund program, community concern and involvement in the Site was low to moderate. Since the site's deletion from the National Priorities List in 1999, community concern and involvement has been minimal.

The Bennington Free Library serves as the local repository for the site records. EPA's project manager contacted the reference librarian on August 24, 2009 to gauge the level of interest in the site file. According to the reference librarian, the files are accessed occasionally.

6.3 Document Review

This five-year review included a review of relevant documents including decision documents, monitoring reports, institutional controls, and trust fund annual financial reports.

6.4 Groundwater Monitoring Data Review

A review was completed of the monitoring reports. A summary of relevant data regarding the components of the Site remedy is presented below.

The ROD specified a monitoring program to address the potential for migration of 1,1,1-TCA, 1,1-DCE, and other contaminants in groundwater (see Section 4.1). Groundwater sampling began in the spring 1991 for the Phase 1A RI, continued through the FS, the September 1995 ROD, the September 1999 deletion from the NPL, and continues based on the revised schedules approved by VT ANR in 2005 and 2009. Beginning with the spring 1994 groundwater sampling, the sampling has also fulfilled the requirements of the November 1993 Vermont Groundwater Reclassification Order.

Data from groundwater monitoring wells sampled since the spring 1994 are shown on Table 1. A summary of the wells follows, beginning from the upgradient location through the TI Zone down to Route 9. See Figure 2 for monitoring well locations.

MW-101M/R wells were installed during the 1991 Phase 1A RI to the northeast of the Disposal Area. These wells are screened in the sandy basal till and bedrock respectively. They are outside

the TI Zone that was established in the September 1995 ROD. Vertical gradient is typically downward. Because no contaminants had ever been detected in either of these wells, as part of the monitoring adjustment made after the 2004 Five-Year Review, VT ANR as the lead agency for the Site approved the removal of these wells from the sampling program.

ERM-2S was installed prior to the RI in response to the request from VT ANR for an investigation of site conditions and is located just off the southwest corner of the Disposal Area. It is screened in the shallow ablation till. From the beginning this has been the most contaminated monitoring well, with 1,1,1-TCA concentrations initially as high as 470,000 μg/L. The 2004 FYR reported that concentrations of all contaminants at ERM-2S had been decreasing since 1998 and were the rates to remain constant, the 1,1,1-TCA MCL could be approached in the next 20-30 years. An update of the exponential decay curve (see Figure 3A) projects a similar extrapolation where 1,1,1-TCA concentrations at ERM-2S would decrease below the MCL in approximately another 20 to 25 years. However, this extrapolation should be viewed as a rough estimate for the following reasons. The decreasing trend appears to continue in the fall data, yet the spring data reveals little change in the past five years. Second, the R^2 value, the statistical measurement of how well the data fit the projection, is 0.67 (the range for R^2 is from 0.0 to 1.0 and the closer to 1.0, the greater the confidence in the "goodness-to-fit") suggesting this extrapolation should be viewed with caution. And further, this extrapolation assumes a continuous rate of decline whereas historically these rates slow down as concentrations decrease and become asymptotic with little decline (see Figure 3B). Nonetheless, while the precision regarding the rate of decrease is not certain, overall the concentrations have been consistently decreasing and thus in 2009 VT ANTR approved the change in sampling frequency from semi-annual (spring and fall) to annual (spring).

MW-112U/M wells were installed during the 1992 Phase 1B RI downgradient of MW-101 and the southeastern corner of the Disposal Area. MW-112U is screened in the shallow ablation till and MW-112M is screened at the top of the silty clay section of the basal till. Vertical gradient is typically downward toward MW-112M. MW-112U was not originally part of the long-term monitoring, but was added to the program in January 2000. As noted in Section 4.2.3, MW-112M triggered Contingency #4 and thus its sampling frequency was increased to quarterly in 1999. The sampling frequency for both wells was reduced to semi-annual in 2005 as there was no significant difference in concentrations from one sampling event to the next. The sampling frequency for both wells was further modified to annual (spring) by VT ANR in 2009.

The 2004 FYR reported that 1,1,1-TCA concentrations in MW-112U were decreasing at a similar rate as ERM-2S and projected approaching the MCL in 15-20 years. The 1,1,1-TCA concentrations have continued to decrease since the 2004 FYR but at a slower rate than at ERM-2S. This is not unreasonable as MW-112U is farther from the original source area. The updated exponential decay curve (see Figure 4) suggests 1,1,1-TCA might attain the MCL in the next 75 to 80 years. That the projection has changed is not surprising given the relative location of MW-112U in the plume; further it is noted that the R^2 value for this extrapolation is 0.05, indicating that no definitive trend has developed.

The 2004 FYR indicated that 1,1,1-TCA and 1,1-DCE concentrations at MW-112M had been increasing from 1994 through 2004. Since then, concentrations for both compounds appear to have stabilized with 1,1,1-TCA and 1,1-DCE concentrations about 600 and 150 μg/L, respectively.

MW-104U/M wells were installed during the 1991 Phase 1A RI downgradient of the Disposal Area and just upgradient of the Fire Pond. These wells are screened in the shallow ablation till and sandy basal till, respectively. Vertical gradient is typically upward toward MW-104U as the groundwater discharges to the Fire Pond and the ground surface at this location is often saturated with MW-104M showing flowing artesian conditions. As noted in Section 4.2.3, MW-104M triggered Contingency #4 and thus its sampling frequency was increased to quarterly in 1999. The sampling frequency for both wells was reduced to semi-annual in 2005 as there was no significant difference in concentrations from one sampling event to the next. The sampling frequency for both wells was further modified to annual (spring) by VT ANR in 2009.

The 2004 FYR reported that 1,1,1-TCA, 1,1-DCE and 1,1-DCA concentrations at MW-104U had fluctuated since sampling began, generally between 500 - 1200 μg/L, 5 – 25 μg/L, and 100 – 450 μg/L, respectively. Data collected from October 2004 through spring 2008 are consistent with the previous data, continuing to fluctuate. This is expected since it is the farthest away from the original source area. As the plume migrates from the source area, concentrations at this well will likely remain consistent for several years and it is likely that concentrations at this well have not yet peaked. The updated exponential decay curve (see Figure 5) reflects this with an R^2 value of 0.003, statistically indicating there is no trend in the data.

Concentrations in MW-104M had shown a similar pattern during the period covered in the 2004 FYR, but in the years following that review, concentrations of 1,1,-TCA and 1,1-DCE have decreased such that both compounds are now meeting their respective MCL.

ERM-4S was installed prior to the RI in response to the request from VT ANR for an investigation of site conditions and is located between the manufacturing building and the Fire Pond. It is screened in the shallow ablation till. It had been sampled semi-annually and no contaminants above 2 μg/L have ever been detected in this well. Consequently, in 2009 VT ANR agreed to the remove this well from the Long-Term Monitoring program.

MW-105M was installed during the Phase 1A RI adjacent to ERM-4S to determine whether the Disposal Area plume was moving past the Fire Pond to the west. It is screened at the bottom of the sandy basal till. Since 2001, 1,1,1-TCA has been detected at very low concentrations, 1J to 5 μg/L. Since the 2004 FYR, concentrations of 1,1,1-TCA and 1,1-DCE have continued to marginally increase, up to 11 and 4 μg/L, respectively. The sampling frequency continues to be quarterly.

MW-103M/R wells were installed during the Phase 1A RI downgradient of the Fire Pond. These were screened in the sandy basal till and bedrock, respectively. These wells exhibit an upward gradient, such that the groundwater flow is upward toward the ground surface and MW-103R typically is under flowing artesian conditions where groundwater flows out of the well onto the land surface. No contaminants have ever been detected in these wells above the method detection levels. The sampling frequency of these wells has been annual (spring) since September 2005.

ERM-5S/D wells were installed prior to the RI in response to the request from VT ANR for an investigation of site conditions and are located near the southeastern corner of the Fire Pond. These wells exhibit an upward gradient, with ERM-5D often under flowing artesian conditions. No contaminants have ever been detected in these wells above the method detection levels. The

sampling frequency of these wells has been annual (spring) since September 2005.

MW-108U was installed during the Phase 1A RI to assess the potential plume emanating from the Concrete Pad Area. It is located adjacent to the northeast corner of the manufacturing building and is screened in the shallow ablation till. In addition to 1,1,1-TCA and 1,1-DCE, tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-DCA, and 1,2-DCE are also present in the Concrete Pad Area plume. The 2004 FYR reported that with the exception of 1,1-DCA, all of the other compounds had similar decreasing trends, apparently peaking in the 1997 to 1999 time interval. Data collected from October 2004 through spring 2008 exhibit continuing decreasing trends with a five-fold decrease in 1,1,1-TCA and approximately two-fold decrease in the other compounds, including 1,1-DCA. The sampling frequency for both wells was reduced to semi-annual in 2009 as there has been no significant difference in concentrations from one sampling event to the next.

MW-109U and MW-110U were installed during the Phase 1A RI in 1991 and are located in the facility parking areas adjacent to Route 7. MW-109U is the most downgradient well within the TI Zone and MW-110U is located 150' west of the southwestern corner of the TI Zone. Both are screened in the ablation till. No contaminants have ever detected in these wells above the method detection levels and their sampling frequency was decreased from semi-annual to annual in September 2005. In 2009, VT ANR modified the sampling frequency of MW-110U to once every two years; MW-109U continues to be sampled annually.

MW-114U was installed in response to the October 1993 Groundwater Reclassification Order. It is located on the south side of Route 7 (the southern boundary pf the TI zone is the north side of Route 7) and it is screened in the shallow ablation till. No contaminants have ever been detected in this well above the method detection levels and its sampling frequency was decreased from semi-annual to annual in September 2005. In 2009, VT ANR modified the sampling frequency of MW-114U to once every two years.

6.5 Site Inspection

EPA conducted a five-year review inspection on April 30, 2009 with representatives from Vishay-Tansitor, Siemens Communications Systems, GZA GeoEnvironmental Inc. (GZA, the consultant for Vishay-Tansitor and Siemens) and VT ANR.

The inspection began with a meeting where the outlook of the facility was presented and then the monitoring data and the long-tem responsibilities were discussed. Following the meeting, the parties conducted a site walkover, and located and inspected the monitoring wells. Following the site inspection, the EPA representative drove around the neighborhoods contiguous to the Site to check for new homes and developments.

The Vishay-Tansitor property, as noted above, is an operating manufacturing facility and has been since 1956. The property is accessed through two entrances from Route 7. The property is not fenced along Route 7 or along the property boundary. There remains a fence around the Disposal Area and another one around the Fire Pond. Beyond the buildings and parking areas, the grounds are maintained as mowed lawns. Farther to the back, near the base of Whipstock Hill, the property is wooded. The property on the south side of Route 7 is a wetland. On the day of the site inspection for this five-year review, there was no indication of any disturbance of the

grounds or any excavation within the TI Zone. The monitoring wells appeared to be in acceptable condition with no indication of frost displacement and all riser caps were secured.

It was reported in previous discussions with Vishay-Tansitor that passive diffusion bags could not be set in wells ERM-2S, ERM-5S, and MW-108U so these wells had been sampled following low-flow procedures. In October 2008, Vishay-Tansitor personnel were unable to collect a sample from MW-104U using a passive diffusion bag and therefore switched back to low-flow sampling procedures using a bailer.

The roads in the vicinity of the Site were driven to check for new development/new use. The area remains predominantly rural residential interspersed with agricultural properties. There did not appear to be any changes on Pleasant Valley Road to the southeast. On the 2004 inspection of this 1.2 mile road there were sixteen houses, three Christmas tree farms, one small corn field, and one motel with a few separate cottages. The same number of homes, tree farms, fields and motel were observed on the 2009 inspection. On Route 7 itself, a motorcycle shop and a farm produce store are east of the Site, and a motel with a few units and a farm are west of the Site. All of these have been present many years; the motel and farm dating back at least to the beginning of the RI negotiations in 1990. These properties appear to remain unchanged in 2009 other than the expansion to a second floor for the motorcycle shop.

Houran Road leads off from Route 7, east of the Site and winds past the Site to the north. It also is predominantly rural residential interspersed with agricultural properties. No new homes were noted.

The New York state line is approximately a half mile west of the Site. The 2004 inspection noted two new developments to the northwest, both more than a mile away from the Site. A quarry had opened on the northwest side of Whipstock Hill (the Site is located on the southeast slope of the hill) and a divided highway (Route 7 bypass) had opened. No land use changes since the 2004 inspection were noted during the 2009 inspection.

6.6 Interviews

EPA had general discussions with Vishay-Tansitor personnel, GZA, and VT ANR staff during the site visit on April 30, 2009. Information regarding zoning was obtained from the Town of Bennington personnel following the site visit. An interview with Bennington Free Library was conducted via telephone.

Michael Smith has been the VT ANR project manager since 1993 and the lead agency representative since December 1999. He coordinates the Groundwater Committee reviews for the Groundwater Reclassification Order and provides the state agencies' comments on the Groundwater Monitoring and Conceptual Model Evaluation reports. He has approved the monitoring modifications currently in place and is satisfied with Vishay-Tansitor's monitoring program.

Adrian Paris and Brett Libby, Vishay-Tansitor staff, were performing the spring sampling event. The Vishay-Tansitor plant manager, the Director of Operations, the Director of Health and Safety, and a representative from Siemens Communications accompanied VT ANR and EPA representatives on the site inspection. Mr. Paris prepares the quarterly monitoring reports and

Mr. Libby is responsible for the sampling and maintenance of the monitoring wells. The site walkover located each well within the TI Zone that is in the sampling program. Several of these wells exhibited flowing artesian conditions.

The environmental easement and restrictive covenants attached to the Vishay-Tansitor deed were located in the Town Clerk's office (Book 354, Page 164). Town staff stated that the public sanitary sewer system, although it extends out to the facility along Route 7, has no other connections in the half mile east of the facility along Route 7. Town water service ends at the intersection of Route 7 and Pleasant Valley Road, about a quarter-mile east of the facility. The zoning for the area remains unchanged, Rural Conservation District. The Town of Bennington Land Use & Development Regulations, adopted February 23, 2004 and last amended June 12, 2006, defines the purpose of the Rural Conservation District as "to preserve the rural character, scenic landscape and natural resources of the area while accommodating low density residential development in a manner that avoids the need for public water supply and public sewer systems". As noted earlier, Vishay-Tansitor's industrial use of the Site represents a grandfathered non-conforming use under the zoning regulations

7.0 TECHNICAL ASSESSMENT

7.1 Question A: Is The Remedy Functioning As Intended By The Decision Documents?

Yes.

Remedial action performance. The RAOs were noted above (see Section 4.1). The threat posed to human health through exposure to groundwater is being prevented by institutional controls. An environmental easement and restrictive covenants are recorded to the property deed. The Settling PRPs certify annually that there has been compliance with all the institutional controls (see Section 4.1). No excavation or disturbance of the soils within the TI Zone has occurred. The use of the Site has not changed since the 1995 ROD.

The threat posed to the environment through exposure from contaminated groundwater discharging to the land surface also has not occurred. Surface water samples collected from the Fire Pond during the RI showed only sporadic VOC concentrations at the method detection levels. Groundwater from the shallow downgradient wells south of the Fire Pond have never shown any contamination thereby indicating that contaminated groundwater is not discharging to the wetlands south of Route 7. Additionally, contingency #3 which pertains to concentrations in the shallow monitoring wells located along Route 7 and would require surface water and sediment sampling has never been triggered.

Groundwater monitoring to ensure that contamination has not migrated beyond the extent at the time of the ROD has continued under both the 1999 Consent Decree and the 1993 Groundwater Reclassification Order. The monitoring has demonstrated that the contamination has not migrated horizontally beyond the Fire Pond. Monitoring prior to the 2004 FYR indicated that 1,1,1-TCA and 1,1-DCE concentrations were increasing in one medium depth well (MW-112M) since monitoring began in 1994. However, since then, as noted in Section 6.4 above, concentrations of these compounds appear to have stabilized. Further, the groundwater data indicate that the plume has stabilized, with no expansion of the plume either vertically or horizontally.

In addition to MW-112M, there are two other medium depth wells with measurable concentrations, MW-104M and MW-105M. At MW-104M, which is located north of the Fire Pond in an upward gradient area, concentrations have decreased to or below the performance standards. At MW-105M, which is west of the Fire Pond, concentrations are slowly increasing, with 1,1,1-TCA concentrations well below its MCL of 200 ppb whereas the 1,1-DCE concentrations are approaching its MCL of 7 ppb (11 ppb and 4.5 ppb, respectively, in spring 2009).

The third RAO, to restore contaminated groundwater to drinking water standards if technically practicable has not been achieved. As noted earlier, it was determined prior to the ROD that it was technically impracticable to restore the groundwater to drinking water standards within a reasonable time frame for several reasons. These included the extremely dense soils which would essentially prohibit the extraction of the contaminated groundwater and the probability that as least some portion of the contamination was in DNAPL form, and thereby creating a long-term source within the saturated soils.

Operations and Maintenance. Neither the ROD nor Consent Decree specified any O&M tasks. With the recording of the environmental easement and restrictive covenants in July 1999, the remedial action was determined to be complete per EPA's guidance. The monitoring wells are maintained as part of regular grounds maintenance for the facility.

Opportunities for Optimization. Based on the extensive data collected since 1994 and trends in water quality, the number and frequency of monitoring locations have been reduced, first in 1999, then in 2005, and just recently in August 2009. In addition, the switch to diffusion bag samplers, in wells that are accessible to them, with the approval of VT ANR in November 2001 has allowed for a more efficient collection of groundwater samples. Further, VT ANR requested the Groundwater Monitoring and Conceptual Model Evaluation reports be submitted in electronic format and the Settling PRPs have done this.

Indicators of Remedy Problems. There are no indicators of remedy problems. As noted above, MW-104U can no longer accept a diffusion bag sampler and is now being sampled following low-flow procedures. Data from the one sampling event after this change detected higher concentration levels, but whether this can be attributed to the change in sampling procedures or represents part of the fluctuation observed at this well cannot be determined at the time of this review. It is noted that the same change in sampling procedure was made at three other wells and the post-change data from those wells have been consistent with the previous data, indicating that the wells are still functioning as intended. Given the expected duration that monitoring will continue, evaluation of the usability of the monitoring wells should be periodically assessed.

Implementation of Institutional Controls. The environmental easement to the State of Vermont and the restrictive covenants were recorded on the property deed on July 30, 1999. Vishay-Tansitor has certified annually that the restrictions have been maintained and not violated, including the restraints on the facility's production well and a prohibition on excavation within the TI Zone without agency approval.

7.2 Question B: Are The Exposure Assumptions, Toxicity Data, Cleanup Levels And Remedial Action Objectives (RAOs) Used At The Time Of Remedy Selection Still Valid?

Yes.

Changes in Standards and TBCs. As part of this five-year review, Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBC) guidance for the Site presented in the ROD were reviewed, and a review of current ARARs was conducted. There have been no changes in the chemical-specific ARARs (MCLs or VT GWPRS) nor any location or action-specific ARARs. ARARs identified in the 1995 ROD and current ARARs and TBCs applicable to this five-year review are included in Appendix C of this report for reference.

EPA's risk database, Integrated Risk Information System (IRIS), indicates the last significant revision for 1,1,1-TCA was July 2009 and that 1,4-dioxane is under external peer review. The revision for 1,1,1-TCA did not change its toxicity assessment and therefore does not affect the selected remedy. It is anticipated that when the 1,4-dioxane toxicity assessment is finalized, the level will likely be lower than EPA current screening level of 6.1 ug/L. Once the assessment is

finalized, the groundwater data should be evaluated based on the new screening level.

Changes in Exposure Pathways. Nine potential exposure pathways were quantitatively assessed as part of the risk assessment during the RI/FS. Neither exposure to bedrock groundwater nor exposure to vapors were part of the quantitative assessment; the former because there was no contamination in the bedrock groundwater, the latter was qualitatively addressed as part of the groundwater ingestion pathway. The ROD identified only ingestion of overburden groundwater in a future residential use exposure pathway as an unacceptable risk. The institutional controls in place have eliminated this pathway.

Land use at the Site has not changed and is not expected to significantly change as the facility continues to manufacture electrical components and has in fact expanded, creating more product lines. Future development of the Site is restricted by the environmental easement, restrictive covenants and the Groundwater Reclassification Order.

Since the entry of the Consent Decree, a potential new exposure pathway was identified: vapor emanating from either contaminated soil or groundwater and intruding into buildings. After this potential pathway was identified in the 2004 FYR, because Vishay-Tansitor is an ongoing manufacturing facility, the potential indoor air pathway was considered as an occupational exposure, and the Settling PRPs compared soil vapor data collected during the RI/FS to OSHA time weighted eight hour values. The soil vapor data were found to be below the OSHA values. Additionally, as noted in the 2004 FYR, in response to VOC concentrations detected in the manhole and septic systems, Vishay-Tansitor discontinued and capped all the floor drains (the facility was constructed on a concrete slab with no basement or crawl space). The facility continues to use solvents in its manufacturing of electrical components; it is a large quantity generator of hazardous waste as reported in the RCRA program (greater than 2200 pounds per month). The facility's HVAC system pulls in ambient air and the calculated rate of air exchange is approximately 12 times per workday in the section of the facility above the Concrete Pad plume. The air exchange rate for the remainder of the facility varies from 1 – 3 times per hour, or 8 -24 times per workday. Additionally, venting hoods are used where etching is performed.

VT ANR, after reviewing the air exchange information, the continued use of solvents within the facility, and their experience at other manufacturing or commercial sties where solvents have been used, indicated that they did not regard this pathway as representing a significant issue.

Although EPA does not consider the indoor migration pathway due to the historic source release to be complete for the current scenario, should future land use change, there would be a need to re-evaluate the indoor air pathway at that time. EPA will continue to monitor land use in future reviews.

Changes in Toxicity and Other Contaminant Characteristics. The 2004 FYR identified 1,4-dioxane as a potential new contaminant for the Site since it can be used as a stabilizer during the manufacturing of 1,1,1-TCA. EPA has classified 1,4-dioxane as a Probable Human Carcinogen, recognizing the possibility that repeated exposure may increase the risk of developing cancer if contact rates are too high and occur for too long. A number of states have set drinking water guidelines ranging from 3 to 85 μg/L (Vermont has set its standard at 20 μg/L); no federal drinking water standard has been set. EPA's risk-based groundwater screening level for drinking water ingestion is 6.1 µg/L. EPA is currently reassessing the toxicity of 1,4-dioxane and when

this process is finalized, a re-evaluation or re-screening of 1,4-dioxane in groundwater samples will be necessary to reflect this change.

Following the 2004 FYR, groundwater samples collected from twelve wells (both inside and outside the TI Zone) during the spring 2005 monitoring event were analyzed for 1,4-dioxane. It was detected in MW-112U at 26 μg/L and in MW-104U at 15 μg/L. The concentration at MW-112U was above the VT GWPRS of 20 μg/L and the concentrations at both wells exceeded EPA's current risk-based screening level of 6.1 μg/L. It was not detected in the deeper wells or in MW-108U downgradient of the Concrete Pad, or in any of the wells downgradient of the Fire Pond, or beyond the TI Zone, indicating that its distribution was similar to other compounds in the plume. The monitoring program continues to sample wells MW-104U and MW-112U during the every other spring sampling event for 1,4-dioxane. The laboratory results indicate 1,4-dioxane has not detected above the method detection limits in either well since 2005.

No other changes in toxicity or characteristics for other contaminants have been identified that would impact the protectiveness of the remedy.

Changes in Risk Assessment Methods. The human health risks discussed in the ROD have been eliminated by the implementation of institutional controls. Groundwater monitoring has demonstrated that the contaminant plume has not migrated beyond the TI Zone. There are no changes that affect the protectiveness of the remedy. Since the target cleanup levels for groundwater outside the TI Zone are the MCLs and VT GWPRS rather than site-specific risk-based concentrations, changes in risk assessment methods would not affect the protectiveness of the remedy.

Expected Progress Towards Meeting RAOs. The first two RAOs have been met. The third one was determined to not be technically practicable. Site-wide monitoring is ongoing, and groundwater contaminant levels at most locations appear to either be decreasing or have stabilized within the TI Zone. Should the rate of decrease remain the same, then attainment of MCLs and VT GWPRS for some of the wells within the TI Zone could occur within twenty to thirty years. For other wells such as MW-104U where concentrations continue to fluctuate and may not have peaked, it is not possible to extrapolate when the groundwater performance standards will be attained.

7.3 Question C: Has Any Other Information Come To Light That Could Call Into Question The Protectiveness Of The Remedy?

No.

No other information has been discovered that would call into question the protectiveness of the remedy.

7.4 Technical Assessment Summary

Based on the data reviewed, observations from the site inspection, and interviews, the remedy is functioning as intended by the ROD. The institutional controls have been implemented and are certified annually to be in compliance. The groundwater monitoring has demonstrated that

contaminants are not migrating to areas beyond the TI Zone or offsite. Therefore, the remedy is functioning as designed and remains protective of human health and the environment. Groundwater monitoring continues and maintenance of the monitoring wells is performed as necessary.

The primary ARARs for groundwater at the TI Zone boundary are the MCLs and the VT GWPRS. These continue to be met not only at the TI Zone boundary but also on the downgradient side of the Fire Pond, consistent with the Site Conceptual Model. Groundwater contamination levels within the TI Zone upgradient of the Fire Pond are generally decreasing.

As noted earlier, EPA is currently reassessing the toxicity of 1,4-dioxane and when this process is finalized, a re-evaluation or re-screening of 1,4-dioxane in groundwater samples will be necessary to reflect this change. However, as all contaminants of concern, including 1,4-dioxane, are non-detect at the TI Zone boundary, it is not anticipated that the upcoming change in the 1,4-dioxane value will affect the protectiveness of the remedy.

Land use at the Site has not changed and is not expected to change. The Site continues as a manufacturing facility. Restrictions on Vishay-Tanistor's water production well are maintained and all excavations or disturbances of the soil within the TI Zone have been done with EPA approval. A potential additional route of exposure (vapor) was identified in the 2004 FYR. Because Vishay-Tansitor is an ongoing manufacturing facility, the potential indoor air pathway was considered as an occupational exposure and the 2004 FYR did not recommend any monitoring for this pathway (nor does the RCRA program require indoor air monitoring even though the facility is designated a RCRA large quantity generator). Nonetheless the RI/FS soil vapor data were compared to OSHA 8-hour time weighted average values and were found to be below those values. Subsequent to this, information provided by the facility indicates that its HVAC systems create 8 – 24 air exchanges per day in part to deal with the facility's continued use of solvents in the manufacturing process.

Based on the current use of solvents in the manufacturing process, the presence of the slab foundation, and the intake of ambient air through the HVAC system, EPA and VT ANR consider any contribution from the historical source release would likely be minimal relative to the ongoing activities. If there is any change in future use of the facility, there will be a need to re-evaluate the indoor air pathway

8.0 ISSUES

The 2004 FYR identified three issues; these have been addressed in the intervening years.

This five-year review did not identify any current issues.

This five-year review identified four potential future issues were site conditions to change. These included the reassessment of the 1,4-dioxane toxicity value, vapor intrusion, institutional controls, and viability of the monitoring wells.. However, as pointed out previously in this report, there are no indications that site conditions will change in the foreseeable future. Therefore the likelihood of these potential issues affecting the protectiveness of the remedy is considered to be minimal.

It is anticipated that the toxicity value for 1,4-dioxane will cause a lowering of EPA's groundwater screening level, however 1,4-dioxane has not been detected beyond the VOC plume and thus does not appear to pose a threat beyond the TI Zone. Concentrations in groundwater continue to decline and thus further reduce any possible contribution from the original source to the vapor intrusion pathway. Regarding the institutional controls, even if the facility were to close (which would be counter to its expanded production), restrictive covenants running with the property prohibit the use of the TI Zone for residential use and there are further restrictions on future use of site groundwater. And finally, the monitoring wells are part of the methodology to measure site conditions; in themselves, they do not pose an issue to the protectiveness of the remedy.

Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Re-assessment of 1,4-dioxane toxicity	N	N
Vapor Intrusion	N	N
Institutional Controls (i.e., confirm no changes in land use	N	N
Viability of Monitoring Wells	N	N

9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

This five-year review did not identify any current issues that affect the protectiveness of the remedy but did identify some issues that potentially could affect the protectiveness of the remedy if unforeseen changes occur at the Site. Therefore, it is recommended that 1,4-dioxane data be re-evaluated when EPA completes the toxicity reassessment (no date has been scheduled for completing the reassessment); continue to monitor land use at the Site relative to the vapor intrusion pathway and institutional controls; and develop a process to address long-term viability of the monitoring wells.

Recommendations and Follow-up Actions

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
1,4 dioxane	Re-evaluate data when toxicity value reassessed	EPA	N/A	2013	N	N
Vapor intrusion	Monitor land use	VT ANR/EPA	N/A	2103	N	N
Inst. Controls	Monitor land use	VT ANR/EPA	N/A	2103	N	N
Viability of MWs	Develop plan to repair or replace MWs as needed	Settling Parties	VT ANR/ EPA	2013	N	N

10.0 PROTECTIVENESS STATEMENTS

Because the remedy selected for the Site is protective, the Site is protective of human health and the environment. Institutional controls have been recorded. The institutional controls have prevented exposure to site groundwater, thereby ensuring the Site remains protective of human health. In addition, Vermont reclassified the groundwater beneath the TI Zone to non-potable use only.

Annual reports certify compliance with the institutional controls and the Vermont Groundwater Reclassification Order. Groundwater monitoring within the TI Zone has shown gradual reductions in concentrations of contaminants. Groundwater monitoring beneath and outside the TI Zone has demonstrated that there continues to be no migration beyond the TI Zone or the Site. The monitoring program will continue to ensure that no migration beyond the TI Zone or the Site occurs.

A potential additional route of exposure (vapor) was identified in the 2004 FYR. Because Vishay-Tansitor is an ongoing manufacturing facility, the potential indoor air pathway was considered as an occupational exposure. The RI/FS soil vapor data were compared to OSHA 8-hour time weighted average values and were found to be below those values. Further, information provided by the facility indicates that its HVAC systems create 8 – 24 air exchanges per day in part to deal with the facility's continued use of solvents in the manufacturing process.

Based on the current use of solvents in the manufacturing process, the presence of the slab foundation, and the intake of ambient air through the HVAC system, EPA and VT ANR consider any contribution from the historical source release would likely be minimal relative to the ongoing activities. If there is any change in future use of the facility, there will be a need to re-evaluate the indoor air pathway

11.0 NEXT REVIEW

The next five-year review for the Tansitor Electronics, Inc. Site will be conducted in 2014. This review is required since hazardous wastes remain at the Site above levels that allow for unlimited use and unrestricted exposure.

TABLE 1
SUMMARY OF CHLORINATED VOLATILE ORGANIC ANALYSES FOR GROUNDWATER
Transitor Electronics, Inc.
Bennington, Vermont

Collection Date	Well Location Well ID Analyte	INSIDE TI ZONE																								OUTSIDE TI ZONE			WATER SUPPLY WELL
		MW-104U											ERM-4S	MW-105M		ERM-5I	ERM-5D	MW-103M	MW-105R	MW-ELF			MW-101U	MW-101M	MW-110U	MW-114U	
		TCA	PCE	TCE	1,1 DCE	1,1 DCA	1,2 DCE	CA	VC	CH	1,1,2 T	1,1,1 TCE	1,2-1,2 DCE	1,1 DCA	TCA	1,1 DCE				TCA	1,1 DCA	CA					
10-Mar-94		2,200	310	310	470	380	360													.60								NS
18-Oct-94		2,300	340	270	500	350																						NS
18-Apr-95		2,200	280	270	480	300															8							NS
20-Oct-95		3,200	470	360	850	480																						NS
15-Apr-96		2,400E	470	36	480E	290E	40														31							NS
8-Oct-96		2,000	710	420	700																							NS
10-Mar-97		2,400	1300	540	770	480	970														13							NS
13-Oct-97		2,200	710	450	760	390																						NS
9-Mar-98		1,800	970	470	640	360	480														27							NS
13-Oct-98		1,900E	89	440	630	400	680																					NS
27-Jan-99		NS											NS	NS		NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
13-Apr-99		1,400	960	450	580	370	560																					NS
27-Jul-99		NS											NS	NS		NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
6-Oct-99		1,400			690	380	77																					NS
12-Jan-00		NS											NS	NS		NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
11-Apr-00		1,300	632	342	420	310	443	82													32							NS
19-Jul-00		NS											NS	NS		NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
10-Oct-00		460E	70	35	540E	330E	46	17																				NS
16-Jan-01		NS											NS	NS		NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
19-Apr-01		1,100	607	323	430	340	443	213						13							37	33						NS
12-Jul-01		NS											NS	13		NS	NS	NS	NS	NS			NS	NS	NS	NS	NS
9-Oct-01		1,400	772	412	570	390	523	262																				NS
22-Jan-02		NS											NS	12		NS	NS	NS	NS	NS			NS	NS	NS	NS	
9-Apr-02		2,200	632	483	560	370		402													27							
21-May-02		NS											NS			NS	NS	NS	NS	NS			NS	NS	NS	NS	
17-Jul-02		NS											NS			NS	NS	NS	NS	NS			NS	NS	NS	NS	
13-Oct-02		1,800	563	423	510	440	463	472						23														
29-Jan-03		NS											NS	27		NS	NS	NS	NS	NS			NS	NS	NS	NS	
23-Apr-03		1,900	302	342	580	530	373	512						32														
15-Jul-03		NS											NS	47		NS	NS	NS	NS	NS			NS	NS	NS	NS	
30-Oct-03		1,400	327	312	420	390	313	377						47														
21-Jan-04		NS											NS	NS		NS	NS	NS	NS	NS			NS	NS	NS	NS	
20-Apr-04		1,300	302	272	470	460	353	512						5.3														
7-Jul-04		NS											NS	4.9	1.2	NS	NS	NS	NS	NS			NS	NS	NS	NS	
20-Oct-04		1,200	342	263	400	370	323	282						5.0	1.1													
20-Jan-05		NS											NS	NS														
11-Apr-05		160E	16	22	370E	290E	0.277	48	3.1	0.295	1.1	35	0.443	5.3	1.5	NS	NS	NS	NS	NS			NS	NS	NS	NS	
20-Jul-05		NS											NS	6J	2J													
1-Nov-05		1100	512	302	480	400	353	312						6.7	1.9	NS	NS	NS	NS	NS			NS	NS	NS	NS	
24-Jan-06		NS											NS	6.8	1.9	NS	NS	NS	NS	NS			NS	NS	NS	NS	
11-Apr-06		940	302	212	350	340		272				272		6.7										NS				
18-Jul-06		NS											NS	7.0	2.2	NS	NS	NS	NS	NS			NS	NS	NS	NS	2Sb-1,2 DCE
6-Sep-06		NS											NS	NS	NS	NS	NS	NS	NS	NS			NS	NS	NS	NS	
23-Oct-06		620	312	222	280	270		222				262		9.3	1.9	NS	NS	NS	NS	NS			NS	NS	NS	NS	
24-Jan-07		NS											NS	7.8	2.0	NS	NS	NS	NS	NS			NS	NS	NS	NS	
23-Apr-07		620	332	192	310	290		232				232		8.3	3									NS				
18-Jul-07		NS											NS	7.3	2.7	NS	NS	NS	NS	NS			NS	NS	NS	NS	
17-Oct-07		610	272	202	300	270		232				282		8.4	2.7	NS	NS	NS	NS	NS			NS	NS	NS	NS	
22-Jan-08		NS											NS	8.0	2.9	NS	NS	NS	NS	NS			NS	NS	NS	NS	
15-Apr-08		20	62		82	52								8.9	3.3									NS				
7-Jul-08		NS											NS	8.6	3.6	NS	NS	NS	NS	NS			NS	NS	NS	NS	
13-Oct-08		230	13	13	180	130	18	15	2.5J					23J	9.0	3.7	NS	NS	NS	NS	NS			NS	NS	NS	NS	
27-Jan-09		NS											NS	8.8	3.7	NS	NS	NS	NS	NS			NS	NS	NS	NS	
30-Apr-09		270	26	14	180	150		15				16		0.29	11.0	4.5												

Notes:
1. Results are in ug/l (ppb)
2. TCA - 1,1,1 Trichloroethane
   1,1 DCE - 1,1 Dichloroethene
   1, 1 DCA - 1,1 Dichloroethane
   PCE - Tetrachloroethylene
   1,2 DCE - 1,2 Dichloroethene
   CA - Chloroethene
   t-1,2 DCE - Trans-1,2 Dichloroethene
   cis-1,2 DCE - Cis-1,2-Dichloroethene
   VC - Vinyl Chloride
   TCE - Trichloroethene
   CH - Chloroform
   1,4 D - 1,4 Dioxane
   1,1,2 T - 1,1,2 Trichloroethane
3. Blank space indicates not detected above method detection level
4. NS - Not Sampled
5. J - Estimated value below method detection level
   E - Estimated value from diluted sample, value exceeded calibration range
6. Vinyl Chloride has not been detected since sampling began.
7. Quarterly sampling of Transitor Water Supply Well and MW-105M started on January 22, 2002.
8. Starting in April 2004, samples from the Water Supply Well and MW-105M analyzed by Method 524.2
9. Well MW-103M not sampled in January 2004 and 2005. Water in well was frozen
10. Samples from MW-104M, -104U, -112D, -112M, -108U and ERM-2S on April 11, 2005 were reprocessed and analyzed at full strength. Results exceeded range of calibrated instrument response.
11. Starting with the November 2003 sampling, the monitoring frequency and locations followed the program specified in Table 5 of the April 2005 report. This program was approved by the VT ANR on September 21, 2005.
12. An estimated concentration of 2S of cis-1,2 DCE was detected in the Water Supply Well on July 18, 2006. The well was resampled on September 6, 2006 and no VOCs were detected.

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FIGURE 1: SITE LOCUS VIEWS

Vishay-Tansitor Electronics Inc., Site, Bennington, Vermont. New York-Vermont boundary is a half-mile to the west

Vishay-Tansitor Electronics Inc. Site, Bennington Vermont. Disposal Area was located at top of photograph in wooded area north of dirt road. Concrete Pad Area was located between the dirt road and the stand-alone building in the top center of the photograph.

FIGURE 2: SITE PLAN WITH TI ZONE

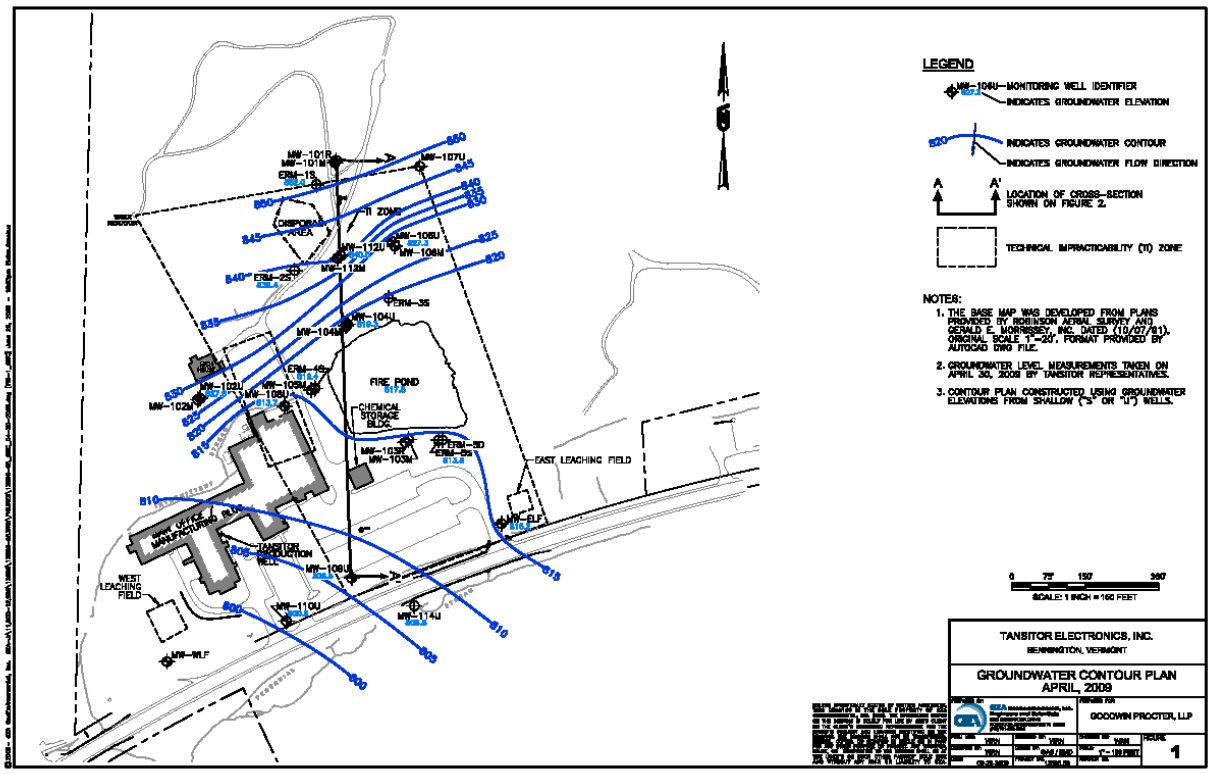


FIGURE 3A: ERM-2S EXPONENTIAL DECAY CURVE

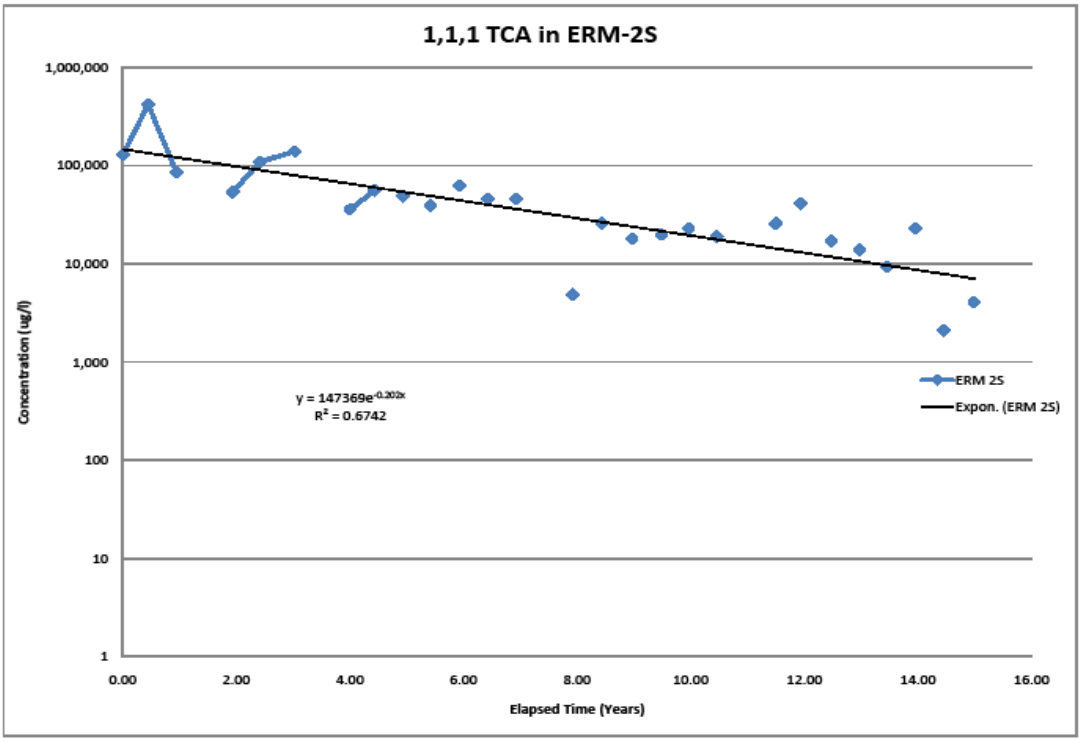


FIGURE 3B: ERM-2S POLYNOMIAL DEGRADATION CURVE

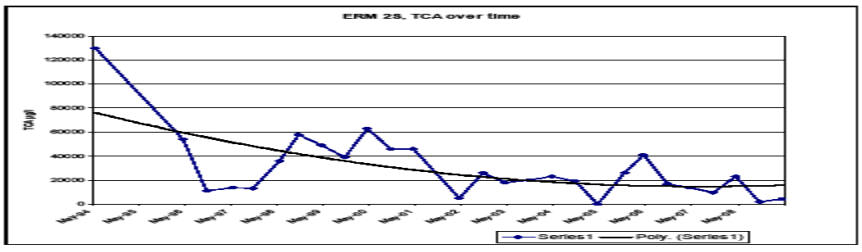


FIGURE 4: MW-112U EXPONENTIAL DECAY CURVE

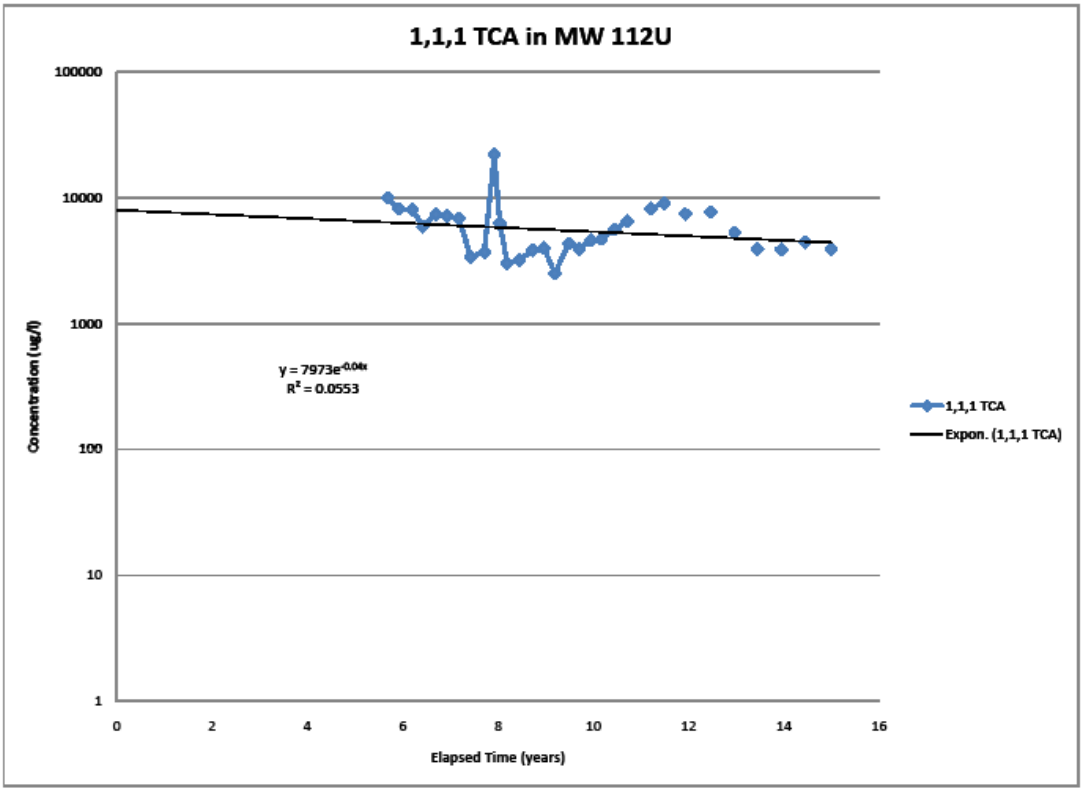
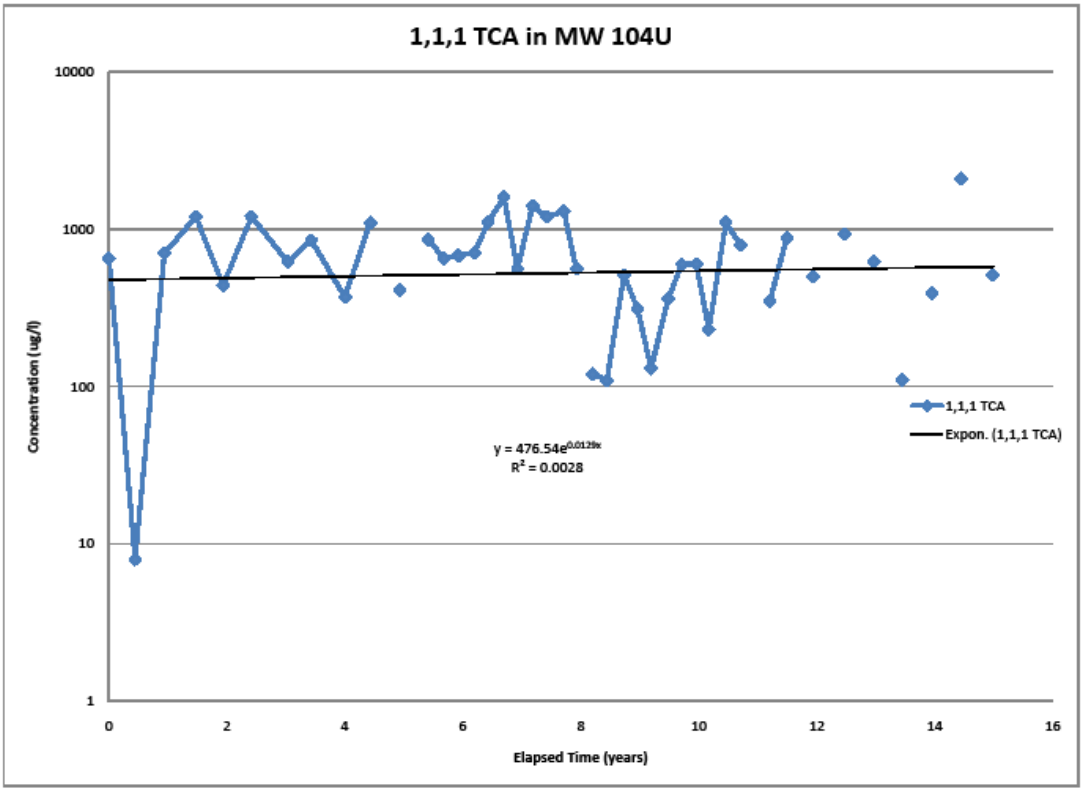


FIGURE 5: MW-104U EXPONENTIAL DECAY CURVE



APPENDIX A: DOCUMENT REVIEW LIST

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Vishay-Tansitor, 2007. *July 18 2007 Groundwater Sampling Test Results.* Brandi Smith, Vishay-Tansitor Electronics, Inc. Bennington, Vermont. August 24, 2007

Vishay-Tansitor, 2008. *January 23 2008 Groundwater Sampling Test Results.* Brandi Smith, Vishay-Tansitor Electronics, Inc. Bennington, Vermont. April 14, 2008

Vishay-Tansitor, 2008. *July 9 2008 Groundwater Sampling Test Results.* Brandi Smith, Vishay-Tansitor Electronics, Inc. Bennington, Vermont. August 26, 2008

Vishay-Tansitor, 2008. *October 15 2008 Groundwater Sampling Test Results.* Brandi Smith, Vishay-Tansitor Electronics, Inc. Bennington, Vermont. December 9, 2008

Vishay-Tansitor, 2009. *January 27-28 2009 Groundwater Sampling Test Results.* Brandi Smith, Vishay-Tansitor Electronics, Inc. Bennington, Vermont. April 2, 2009

APPENDIX B: VERMONT GROUNDWATER RECLASSIFICATION ORDER

TANSITOR 2009 FIVE-YEAR REVIEW

STATE OF VERMONT
AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CLASS 4 GROUNDWATER

Modification to
Reclassification Order
of November 23, 1993

Re:

Application of
Tansitor Electronics, Inc.
For a Reclassification
of a Portion of The Groundwater Resources
at the Tansitor site in Bennington, Vermont

February 28, 1994

Modification to
Reclassification Order
of November 23, 1993
Re: Tansitor Electronics

I. Background

On November 23, 1993, the Secretary of the Agency of Natural Resources issued a Groundwater Reclassification order under the authority of 10 V.S.A., Chapter 48, for a portion of the groundwater at the site of Tansitor Electronics, Inc. ("Tansitor"), in Bennington, Vermont.

This order reclassified an approximately 9.6 acre area of ground, wholly on Tansitor's property, from Class 3 (suitable for use as a domestic water supply, and for some industrial and agricultural purposes) to Class 4 (not potable, but suitable for some industrial and agricultural purposes).

The reclassification order imposed four conditions on the applicant, Tansitor, to facilitate appropriate oversight over the next five years. The conditions required two major actions by the applicant:

1. Surveying, boundary marking, and filing of a map in the town records, so the public would have available information on location of the reclassified area was, and

2. Continued monitoring of the site to track the subsurface conditions near and within the reclassified area.

Tansitor has requested modifications to the order, based on economic considerations, contending that the purpose of the order could be upheld at a lower cost to Tansitor.

II. Findings

1. No change in the location or size of the reclassified area has been requested.

2. For certain monitoring wells, with high levels of contaminants of concern in them, adherence to extremely low levels of detection places an unnecessary economic burden on the applicant.

3. Silver is a secondary contaminant under drinking water regulations, with no known health effects. Two years of monitoring results with no detection of silver is an adequate oversight for this chemical, on a well-by-well basis.

4. Lead is a primary contaminant with significant health effects, and there is a substantial public interest in environmental lead. Semi-annual monitoring for

this contaminant, for at least five years, is in the public interest.

5. Groundwater sampling twice per year, in the fall and spring provides information correlated to seasonal fluctuations of subsurface groundwater conditions. Two samples per year provides increased statistical validity to analyzing for and detecting trends in subsurface groundwater conditions.

6. Self-monitoring is a basic tenet of the state's environmental programs. With appropriate training and oversight, a specific employee of Tansitor may perform sampling and reporting on behalf of Tansitor.

7. By adding another existing monitoring well to the list of wells to be monitored, and alternating sampling from that well with another well nearby, additional subsurface groundwater data will be available at no increased cost to Tansitor.

III. Modifications to the Reclassification Order

Based on the findings noted herein, on petition of Tansitor Electronics, Inc., and on recommendation of the Groundwater Coordinating Committee, I order the following changes to the reclassification order issued on November 23, 1993.

1. For the following observation wells, the detection limits shall be low enough to provide an accurate representation of the contaminant levels:

ERM-2S
MW-104U
MW-108U

For the remaining observation wells, the detection limit is unchanged from the order.

2. For each observation well, after two years of semi-annual sampling and no detection of silver, Tansitor may discontinue sampling for silver at that well.

3. Upon written approval from the Secretary of the Agency of Natural Resources, Tansitor may conduct self monitoring and self-reporting of sample results, by a specific, named, employee. In the event the Secretary does not approve self-monitoring and reporting, or withdraws such approval, Tansitor shall use an independent consultant to perform these tasks.

4. Tansitor shall alternate semi-annual monitoring between the two observation wells MW-112M and MW-104M. This monitoring requirement replaces the requirement for semi-annual monitoring of well MW-104M.

Barbara G. Ripley
Secretary

Date: 3/10/94

DEC 01 1993

State of Vermont

Department of Fish & Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
Fish & Game Board
Natural Resources Conservation Council

Telephone Relay Service
for the Hearing Impaired
1-800-253-0191 TDD > Voice
1-800-253-0195 Voice > TDD

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
WATER SUPPLY DIVISION
The Old Pantry Building
103 South Main Street
Waterbury, VT 05671-0403

TELEPHONE (802) 241-3400
FACSIMILE (802) 244-5141

November 24, 1993

Carroll Killen, Director
Tansitor Electronics, Inc.
P.O. Box 210
Bennington, VT 05201

Dear Mr. Killen:

Enclosed please find a reclassification document, reclassifying a portion of the lands owned by Tansitor in Bennington as Class 4, or non-potable. The document has been signed by the Secretary of Natural Resources, in accordance with the provisions of 10 V.S.A., Chapter 48, governing reclassification of groundwaters of the state.

In this department's and the Groundwater Coordinating Committee's reviews of your petition, the opinion of the reviewers was that it was in the public interest to reclassify this portion of the groundwater to a non-potable classification. In reaching this recommendation to the Secretary, we examined the criteria specified in statute and reached the findings described in the reclassification document.

I ask you to give your attention to the following requirements and conditions of the reclassification:

1. The area reclassified is not identical to the area in your petition. This simpler shape was done to facilitate identification and tracking of the actual land area involved.

2. Your petition requested a classification that was both horizontally and vertically delineated. Even if we had agreed that such a designation was appropriate, the language in the Groundwater Protection Rule & Strategy does not provide for a vertical reclassification. Accordingly, all groundwater beneath the area designated as Class 4 is Class 4 groundwater at all depths.

3. The reclassification contains upgradient, plume, and downgradient monitoring requirements on a semi-annual basis. Please contact us to establish who will do the sampling and who will analyze the results.

4. Tansitor must engage the services of a Vermont licensed surveyor to describe the reclassified area accurately, to prepare a plan of it, and to mark the corners of the reclassified area in the field with permanent markers. This will facilitate identification of the actual reclassified area.

5. Although not discussed in this document, you should know that we will, under the drinking water regulations, be requiring the company to monitor the company well adjacent to the Class 4 area for the contaminants of concern, among others. This monitoring will be required in accordance with the Vermont Water Supply Rule and is not a special or additional requirement of this reclassification.

Please review this document carefully, and if you would like to discuss it further or need clarification of the requirements, please feel free to contact me.

Finally, we appreciate and thank you for the civilities and courtesies you have shown to us as we have considered and reviewed your petition.

Sincerely,

Jay E. Rutherford, P.E., Director

cc: Governor Dean
Rep. Richard Pembroke
Merrill Hohman, US EPA w/encl
Jane Downing, US EPA w/encl
Secretary Chuck Clarke
Commissioner Jack Long
William Ahearn, DEC-RMMD w/encl
Groundwater Coordinating Committee Members w/encl

STATE OF VERMONT
AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CLASS 4 GROUNDWATER

Findings and Reclassification Order

Re:

Application of
Tansitor Electronics, Inc.
For a Reclassification
of a Portion of The Groundwater Resources
at the Tansitor site in Bennington, Vermont

November 18, 1993

I. Background

On July 15, 1993 the Water Supply Division received an application from Tansitor Electronics, Inc. to reclassify a portion of the groundwater under its site on Vermont Route 9 west of Bennington, Vermont. The application contained a summary report on the conditions at the site which led up to the application with reference to four other reports with detailed information.

According to the reports, the groundwater at the site has been contaminated by industrial solvents including 1,1,1-trichloroethane, 1,1-dichloroethane and other volatile organic compounds which have reached the groundwater as a result of historic disposal practices. These practices stopped approximately fifteen years ago.

The application requesting reclassification from Class 3 groundwater to Class 4 groundwater, due to concentrations of chemicals exceeding drinking water standards, was signed by 72 affected or potentially affected persons. The package was reviewed by hydrogeologists assigned to the Hazardous Materials Management and Water Supply Divisions and determined to be complete with minor exceptions. By letter dated July 29, 1993 Tansitor's consultant, Environmental Project Control, Inc responded to the noted exceptions and the application was judged complete on that date.

A notice of a public hearing was mailed to all known parties of interest and published in the Bennington Banner on August 11, 1993.

An informal public hearing was held on September 15, 1993 in the Mt. Anthony Union High School with approximately forty persons in attendance. There were no adverse comments to the reclassification request. Approximately 5 commentors focused their remarks on the projected economic hardships if Tansitor were denied the reclassification, and as a result were forced to conduct additional expensive testing and remediation of the groundwater.

On September 30, 1993 Merrill S. Hohman, Director of the Waste Management Division, US EPA Region I, requested via letter that the Secretary not issue a reclassification order until after EPA had developed its final RI/FS and clean up plan. The plan is expected during June of 1994

II. Findings

Regarding the application from Tansitor Electronics, Inc. for a reclassification of the groundwater beneath the proposed Class 4 area at the Tansitor site in Bennington, Vermont, the Secretary of the Agency of Natural Resources, under the provisions of 10 VSA, Section 1394 and the Ground Water Rule and Strategy, Chapter 12, Section 12-401, finds:

1. Regarding the use or potential future use of the ground water as a public water supply source-

   ...that the groundwater under the attached designated Class 4 area is not in use as a public water supply source and the contamination present in the ground precludes the potential future use of the groundwater for the immediate (5 years) future.

   ...that the present water supply well for the Tansitor facility does draw its water from the fractured bedrock aquifer nearby, but there is no available evidence that indicates that the water supplying the well comes from beneath the proposed Class 4 area and it is further noted that this finding and reclassification order does not preclude the continued use of that well for the Tansitor facility as long as the water continues to meet all applicable drinking water standards;

2. Regarding the extent of the activity which poses a risk to the groundwater-

   ...that the sources of contamination found in the groundwater were the result of former, now discontinued, disposal practices which were limited in areal extent to a very small area entirely within the Tansitor property;

3. Regarding the current water quality

   ...that the groundwater is contaminated beyond drinking water standards for 1,1,1 trichloroethane and 1,1 dichloroethane, at a 95% confidence level

4. Regarding the availability of the groundwater in quantities needed for beneficial use-

   ...that the unconsolidated materials overlying the bedrock demonstrate a low permeability which limits the feasibility of beneficial use and that the potential for the bedrock to yield water for beneficial uses is unknown except a-

indicated by the Tansitor production well and other nearby wells;

5. Regarding the consequences of potential contamination and the availability of alternate sources of water-

...that the groundwater is already contaminated beyond drinking water standards so that the issue of potential contamination is moot, and that the availability of alternate sources of water is demonstrated by the Tansitor production well, which continues to produce potable water and the other nearby wells which remain uncontaminated.

6 Regarding the classification of adjacent surface water and other factors relevant to determine the maximum beneficial use of the aquifer-

...that the classification of the adjacent surface water in the perennial stream south of and down gradient from the Tansitor site is Class B, suitable for public water supply use with filtration and disinfection;

...and that the current use of the property as an industrial facility is compatible with a Class 4 classification.

III. The Class 4 Groundwater Area

A map showing the Class 4 groundwater area at the Tansitor site in Bennington, VT, as ordered by the Secretary, is attached.

The area is described as:

Beginning at a point on the northerly Right-of-Way boundary of Route 9, said point being located 216 ft., more or less, southwest along the Right-of-Way boundary from the southwestern corner of a parcel of land owned now or formerly by Buzzell;

Thence, turning to the northwest approximately right angles to the Route 9 Right-of-Way, and travelling 774 ft., more or less, to a point marked by the monitoring well MW-107D;

Thence, turning to the west and travelling 586 ft., more or less, to a point marked by a water reservoir;

Thence, turning to the southeast and travelling 890 ft., more or less, to a point in the

northerly boundary of the Route 9 Right-of-Way, said point being located a distance of 424 ft., more or less, along the northerly boundary of Route 9, from the point of beginning;

Thence, travelling along the northerly boundary of the Route 9 Right-of-Way a distance of 424 ft., more or less, to the point of beginning.

Said area contains 9.6 acres, more or less.

IV. Conditions of This Reclassification Order.

1. Monitoring of the groundwater is required to determine the need, if any, for future modifications or extensions of the reclassification order. Tarsitor Electronics, Inc., as a condition of this reclassification order, shall conduct the following monitoring of the groundwater at its site.

   There are four monitoring areas to the Tarsitor Class 4 groundwater quality monitoring plan. These are:

   1. Disposal Area/Fire Pond Plume Monitoring
   2. Concrete Pad Plume Monitoring
   3. Downgradient Compliance Monitoring
   4. Upgradient Background Monitoring

   Groundwater monitoring shall be conducted semi-annually in the Spring and Fall for a period of at least five (5) years commencing January 1, 1994. The monitoring schedule shall be reconsidered by the Water Supply Division at the completion of the first five year monitoring period and petitioner may be required to continue monitoring.

   Monitoring shall be conducted by an independent consultant and analyses shall be performed by a laboratory acceptable to the Secretary. All analyses shall be evaluated by methods with detection limits as good or better than the Preventive Action Limits in Subchapter 7 of Chapter 12 of the Environmental Protection Rules, Ground Water Protection Rule & Strategy.

   The groundwater samples taken from the Disposal Area/Fire Pond, Concrete Pad and downgradient monitoring wells shall be analyzed for the volatile organic Contaminants of Concern and lead and silver. The upgradient monitoring wells shall be monitored for VOCs and lead and silver.

   The wells to be monitored in each monitoring area are described below. The well identifiers are those depicted on a map entitled Exploration and Sampling Locations Remedial Investigation (Figure 2 of the Tarsitor Electronics, Inc. Class 4 Groundwater Area, Bennington, VT report, dated 7/15/93.

Area 1: Disposal Area/Fire Pond Plume

ERM-3S: (shallow directly down gradient monitoring)
MW-103M: (medium depth directly down gradient monitoring)
MW-103R: (deep directly down gradient monitoring)

These wells (ERM-3S, MW-103M & 103R) will allow the Department to determine if the contaminants are migrating under the Fire Pond.

ERM-2S: (shallow in-plume monitoring)
MW-104U: (shallow in-plume monitoring)
MW-104M: (medium depth in-plume monitoring)

These wells will allow the Department to determine what is occurring within the plume.

Area 2: Concrete Pad Plume

MW-108U: (shallow in-plume monitoring)

This well will allow the Department to determine what is occurring within the plume.

MW-109U: (shallow directly downgradient monitoring)
MW-110U: (shallow directly downgradient monitoring)

These wells will allow the Department to determine if the plume is migrating.

Area 3: Downgradient Compliance Monitoring

MW-ELF: (shallow monitoring)

This well will allow the Department to determine whether or not there is a plume directly downgradient of the eastern leaching field.

New Well: If Tansitor Electronics, Inc., is able to secure sufficient access, a shallow monitoring well designed to intercept the top ten (10) feet of the water table shall be drilled and monitored on the south side of Rte. 9, approximately halfway between MW-109U and MW-ELF. This well will allow the Department to estimate if the plume is migrating beneath the highway and to refine the groundwater flow contour map.

In the event Tansitor Electronics, Inc. is unable to secure access to lands at the location specified above, it shall install a series of shallow monitoring wells across the Class 4 Groundwater area, on the North side of Route 9, at locations to be designated by the Secretary.

Area 4: Upgradient Background Monitoring

MW-101M:

Monitoring this well will provide background water quality data at the site.

For all sampling, groundwater levels shall be taken at the time of monitoring and supplied to the Department with the sampling results

2. Reporting

Tansitor Electronics, Inc., shall report all results from its monitoring of the groundwater required above, semi-annually on or before June 30 and December 31, 1994, 1995, 1996, 1997 and 1998. The reporting shall be to the Water Supply Division, in a format acceptable to the Secretary.

The required reports shall include all data from the monitoring, a map showing the location of the sampling points and the concentrations of the monitored compounds, and a brief report summarizing the groundwater conditions on the Tansitor site with emphasis on the groundwater quality within the Class 4 groundwater area.

3. Surveying of Class 4 Area

Within 90 days of this reclassification order, Tansitor Electronics, Inc., shall employ a licensed surveyor to prepare a map of the reclassified area, mark the corners in the field with suitable permanent markers, and prepare a description of boundaries of the reclassified area

4. Land Records

Upon completion of the surveying of the Class 4 area, Tansitor Electronics, Inc., shall cause the map and survey description of the reclassified area to be filed in the land records of the Town of Bennington.

V. **Reclassification Order**

Based on the findings listed above, and other considerations, I order the reclassification of the groundwater beneath the area shown on the attached map from Class 3 to Class 4.

Chuck C Clarke

Chuck C. Clarke, Secretary

Date: 11/23/93

APPENDIX C: ARARs and TBCs

TANSITOR 2009 FIVE-YEAR REVIEW

TABLE 1-1

CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) AND CRITERIA TO BE CONSIDERED (TBCs)

Medium	Requirement	Summary of Requirement	Status	Action to be Taken to Attain Requirement	Applicable Alternatives
Groundwater	Vermont Groundwater Protection Act - 10 VSA Chapter 48.	Act protects groundwater through existing regulatory programs and provides restrictions, prohibitions, standards and criteria for groundwater protection for programs which regulate activities which may affect groundwater.	Applicable	Vermont has classified the groundwater plume as Class IV, which is not acceptable for drinking but allows commercial and industrial uses. All of the alternatives will attain standards for these permitted uses at the site. Adjacent to the plume, groundwater is classified as Class III. Pump and treat (MM-3) will ensure that contaminants do not migrate and cause a violation of these standards. Monitoring (MM-2) will detect any migration of contaminants away from the Class IV area	MM-1 MM-2 MM-3
	Vermont Groundwater Protection Rule and Strategy - 10 VSA Chapter 48, EPR Chapter 12	The standards consist of groundwater classifications, which designate and assign uses for groundwater. In addition, the regulations establish water quality criteria necessary to sustain the designated uses.	Applicable	Same as above.	MM-1 MM-2 MM-3
	EPA Groundwater Protection Strategy	Provides classification and restoration of goals of groundwater based on its vulnerability, use and value	To Be Considered	This strategy is considered in conjunction with the Federal SDWA and Vermont Groundwater Protection Rule and Strategy in determining cleanup goals	MM-1 MM-2 MM-3
	Federal Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) - 40 CFR Part 141	Maximum Contaminant Levels (MCLs) are enforceable standards that are applicable to drinking water supplies. MCLs are relevant and appropriate for groundwater that may be a potential source of drinking water.	Relevant and Appropriate	MCLs must be attained unless waived. None of the alternatives will attain these ARARs in a reasonable timeframe	MM-1 MM-2 MM-3

TABLE 2-1 (CONT'D)

Medium	Requirement	Summary of Requirement	Status	Action to be Taken to Attain Requirement	Applicable Alternatives
	SDWA Maximum Contaminant Level Goals (MCLGs) - 40 CFR 141.50-141.62	MCLG are set with a margin of safety at levels that would result in no known or anticipated adverse health effects over a lifetime.	Non-zero MCLGs are relevant and appropriate	Non-zero MCLs must be attained. None of the alternatives will attain these ARARs in a reasonable time frame.	MM-1 MM-2 MM-3
	RCRA Groundwater Protection Standard - 40 CFR 264.94	The RCRA groundwater protection standard is established from groundwater monitoring of RCRA permitted treatment, storage or disposal facilities. The standard is set at either an existing or proposed RCRA-MCL, background concentration, or an alternate concentration protective of human health and the environment. RCRA-MCLs may be used or ACLs may be developed at the site to identify levels of contamination above which human health or the environment is at risk and provide an indicator when corrective action is necessary	Relevant and Appropriate	Compliance with concentration limits and regular monitoring requirements will be considered in developing remedial alternatives for groundwater. None of the alternatives will achieve RCRA - MCLs in a reasonable time frame. MM-2 and MM-3 will meet monitoring requirements.	MM-1 MM-2 MM-3
	US EPA Reference Doses (RfDs)	RfDs are dose levels developed by EPA for use in the characterization of risks due to non-carcinogens in various media.	To Be Considered	RfDs are typically employed to characterize risks of groundwater contaminant exposure (for ingestion pathways).	MM-1 MM-2 MM-3
	EPA Carcinogen Assessment Group Potency Factors	EPA Carcinogenic Potency Factors are used to compute the individual incremental cancer risk resulting from exposure to carcinogens.	To Be Considered	These factors are used to assess health risks from carcinogens present at the site	MM-1 MM-2 MM-3
	EPA Health Advisories and Acceptable Intake Health Assessment Documents	Intended for use in qualitative public health evaluation of remedial alternatives.	To Be Considered	Used, if adequate data exist, in assessing health risks from ingesting groundwater at the site.	MM-1 MM-2 MM-3

TABLE 1-2

LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) AND CRITERIA TO BE CONSIDERED (TBCs)

Location	Requirement	Summary of Requirement	Status	Action to be Taken to Attain Requirement	Applicable Alternatives
Wetlands	Vermont Wetlands Protection Law (10 VSA Chapter 37) and the Vermont Wetland Rules.	The rules require that the Vermont Water Resources Board adopt rules to identify and protect Vermont's significant wetlands. These standards include wetland classification. Any activities within fifty-foot buffer zones around vegetated wetlands, or within the wetlands, require the filing of a Request for Conditional Use Determination with the ANR.	Applicable	Protection of wetlands and compliance with the substantive requirements of these regulations will be incorporated into the design.	MM-2 MM-3
	Federal Clean Water Act (CWA) (33 USC 1344) 40 CFR 230, 404.	Applies to dredge and fill activities. Under this requirement, no activity that adversely affects a wetland shall be permitted if a practicable alternative that has less effect is available. Appropriate and practicable steps must be taken to minimize the potential adverse impacts of the discharge on the aquatic ecosystem.	Applicable	During the identification, screening, and evaluation of alternatives, the effects on wetlands are evaluated. All work will be performed in accordance with these regulations.	MM-2 MM-3
	Executive Order 11990, Protection of Wetlands - 40 CFR 6, Appendix A	Under this regulation, Federal agencies are required to minimize the destruction, loss or degradation of wetlands and preserve and enhance natural beneficial value of wetlands.	Applicable	Remedial alternatives that involve construction must include all practical means of minimizing harm to wetlands. Wetlands protection consideration must be incorporated into the design of the remedial action.	MM-2 MM-3
	Fish and Wildlife Coordination Act (16 USC 661)	This regulation requires that any Federal Agency that proposes to modify a body of water must consult with the U.S. Fish and Wildlife Services. Addressed under CWA regulations at 40 CFR 230 and 404.	Applicable	During the identification, screening, and evaluation of alternatives, the effects on wetlands are evaluated. If an alternative modifies a body of water, EPA must consult U.S. Fish and Wildlife Services.	MM-2 MM-3
	Endangered Species Act of 1973 (16 USC 531) 50 CFR 200 and 50 CFR part 402	This regulation is designed to protect endangered species. Consultation with the Department of the Interior is required if endangered species are identified at or near the site.	Applicable	Design of remedial action must include means to minimize disruption of the natural environment.	MM-2 MM-3

TABLE 2-2 (CONT'D)

Location	Requirement	Summary of Requirement	Status	Action to be Taken to Attain Requirement	Applicable Alternatives
Floodplains	RCRA Location Standards - 40 CFR 264.18 and 761.75	This regulation outlines the requirements for construction of a RCRA facility on a 100-year floodplain.	Applicable	No activities are expected to take place in a 100 year floodplain.	None
	Executive Order 11988, Protection of Floodplains - 40 CFR 6, Appendix A	Federal Agencies are required to reduce the risk of flood loss, minimize impact of floods and restore and preserve the natural and beneficial value of floodplains.	Applicable	No activities are expected to take place in a 100 year floodplain.	None
Groundwater	Vermont Groundwater Protection Rule and Strategy - 10 VSA Chapter 48, EPR Chapter 12	Instructs the ANR to identify, map, and classify groundwater into classes so that various groundwater resources shall be enhanced, maintained and protected. The regulations prescribe the minimum water quality criteria required to sustain the designated uses. The Hazardous Material Management Division of the Department of Environmental Conservation reviews petitions for the reclassification of groundwaters to Class I, II or IV status.	Applicable	The ANR approved a petition to reclassify the site area groundwater to Class IV status on November 18, 1993. The requirements provided in AWR's determination must be followed	MM-1 MM-2 MM-3

TABLE 1-3

ACTION-SPECIFIC APPLICABLE OR RELEVANT
AND APPROPRIATE REQUIREMENTS (ARARs) AND CRITERIA TO BE CONSIDERED (TBCs)

Requirement	Summary of Requirements	Status	Action to be Taken to Attain ARARS	Applicable Alternative
Federal				
National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 61)	Specify maximum emission rates of hazardous air pollutants	Applicable	Remedial alternatives involving air emissions from treatment units must comply with these regulations.	MM-3
RCRA 40 CFR 264 Subpart AA, Air Emission Standards for Process Vents	Regulates facilities that have operations involving air emissions above particular levels.	Relevant and Appropriate	Air Stripping System must conform to these requirements.	MM-3
RCRA 40 CFR 264 Subpart BB, Air Emission Standards for Equipment Leaks	Requirements governing response to equipment leaks at facilities that may cause air emissions	Relevant and Appropriate	If, during implementation of remedial action, equipment leaks occur the response must be in conformance with this Subpart.	MM-3
OSWER Directive 9355.0-28, Air Stripper Control Guidance	Guidance regarding use of air emission controls at CERCLA sites.	To Be Considered	The remedial action should address this guidance.	MM-3
Department of Transportation (DOT) (49 CFR 107, 171.1-171.5)	Regulations for off-site transport of hazardous waste. Regulations specify procedures for packaging, labelling, manifesting, as well as transportation	Applicable	Off-site shipment of hazardous materials will have to be properly contained, labelled and manifested.	MM-2 MM-3
Fish and Wildlife Coordination Act (16 USC 661)	Requires the notification of the appropriate State agency exercising jurisdiction over Wildlife Resources and U.S. Fish and Wildlife Service, when undertaking any Federal action that modifies any body of water or affects fish and wildlife.	Applicable	Relevant federal agencies must be contacted to help analyze impacts of remedial action on wildlife in wetlands and rivers.	MM-3
Resource Conservation and Recovery Act (RCRA) Subtitle C, 40 CFR 260	RCRA regulates the generation, transport, storage, treatment and disposal of hazardous waste.	Relevant and Appropriate	Remedial alternatives involving transport, storage and disposal of materials must comply with these regulations	MM-2 MM-3

TABLE 2-3 (CONT'D)

Requirement	Summary of Requirements	Status	Action to be Taken to Attain ARARS	Applicable Alternative
40 CFR 264 Subpart B - General Facility Standards for Owners and Operators of Permitted Hazardous Waste Facilities (40 CFR 264.10 - 264.18)	General facility requirements outline general waste analysis, security measures, inspections and training requirements.	Relevant and Appropriate	Any facility will be constructed, fenced, posted, and operated in accordance with this requirement.	MM-2 MM-3
Subpart C - Preparedness and Prevention (40 CFR 264.30 - 264.37)	Requirements for safety equipment and spill control.	Relevant and Appropriate	Safety and communication equipment will be maintained at the site. Local authorities will be familiarized with site operations.	MM-2 MM-3
Subpart D - Contingency Plan and Emergency Procedures (40 CFR 264.50 - 264.56)	Requirements for response to procedures such as explosions and fires.	Relevant and Appropriate	Plans will be developed and implemented during site work. Copies of plans will be kept on site.	MM-3
Subpart E - Manifesting, Record-keeping and Reporting (40 CFR 264.70 - 264.77)	Requirements for reporting and recordkeeping at RCRA facilities.	Relevant and Appropriate	Those parts of the regulation concerned with long term monitoring and maintenance of the site will comply with this requirement.	MM-2 MM-3
Subpart F - Groundwater Protection (40 CFR 264.90 - 264-101)	Requirements for groundwater monitoring program for the site.	Relevant and Appropriate	Those parts of the regulation concerned with long term monitoring and maintenance of the site will comply with this requirement.	MM-2 MM-3
Subpart G - Closure and Post-Closure (40 CFR 264.110 - 264.120)	Requirement for closure and post-closure of hazardous waste facilities.	Relevant and Appropriate	Considered for each alternative. Landfill must be closed in a manner which controls, minimizes or eliminates the potential for landfilled contaminants to threaten human health and the environment. Regular monitoring and maintenance will be performed for 30 years.	MM-2 MM-3
State Vermont Air Pollution Control Regulations 10 V.S.A. Section 551, et. seq. EPR Chapter 5	Regulations specify requirements to prevent occurrence of conditions of air pollution where such do not exist and to facilitate abatement of conditions of air pollution where and when such occur.	Relevant and Appropriate	Air stripping system must meet air quality standards and allowable discharges	MM-3
Vermont Hazardous Waste Management Act - 10 VSA Chapter 159, EPR Chapter 7	Regulates the storage, transport, treatment, disposal, recycling, and managing of hazardous waste. Incorporates requirements of RCRA, 40 CFR Part 264, Subpart F, groundwater protection standards.	Applicable	Alternatives will achieve groundwater protection standards through treatment and will comply with regulations which apply to installing groundwater monitoring wells and compliance monitoring.	MM-2 MM-3

TABLE 2-3 (CONT'D)

Requirement	Summary of Requirements	Status	Action to be Taken to Attain ARARS	Applicable Alternative
Land Use and Development Law (10 VSA Part 5, Chapter 151)	Regulates areas in which there is construction or improvement, or some proposed change to the land.	Relevant and Appropriate	Extraction and treatment system must produce no undue air or water pollution	MM-3
Vermont Water Quality Standards listed under the Vermont Water Pollution Control Act (VWPCA) - 10 VSA Chapter 47 and 314 CMR 3.00 and 4.00	The standards consist of classification of surface waters which designate the most sensitive uses for which various waters shall be enhanced, maintained, and protected; and which prescribe the minimum water quality criteria required to sustain the designated uses. Standards regulate discharges of pollutants to surface waters.	Applicable	Effluent standards will be attained in the discharge of treated groundwater to the perennial stream or Browns Brook. No state numerical standards apply to parameters measured at the site. However, the regulations require the use of Federal Ambient Water Quality Criteria to establish water quality for toxic pollutants. AWQC are non-regulatory concentrations for the protection of aquatic life; and the protection of human health from water ingestion and fish consumption.	MM-3
American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) Time Weighted Average (TWA) and Short Term Exposure Limit (STELs)	TLVs are issued as criteria for controlling air quality for occupational settings. STELs are fifteen minute time-weighted concentrations	To Be Considered	TLV-TWAs and STELs will be used in the evaluation of predicted air concentrations during remedial activities.	MM-3
CAA-State Implementation Plan Emission Standards - 40 CFR 52	Emission Standards designed to attain National Ambient Air Quality Standards	Relevant and Appropriate	State Implementation Plan requirements are enforceable ARARs and must be attained.	MM-3

APPENDIX D: SITE INSPECTION CHECKLIST and PHOTOGRAPHS

TANSITOR 2009 FIVE-YEAR REVIEW

I. SITE INFORMATION	
Site name: Tansitor Electronics Superfund Site	**Date of inspection: April 30, 2009**
Location and Region: Bennington, Vermont, Region 1	**EPA ID: VTD000509174**
Agency, office, or company leading the five-year review: USEPA	**Weather/temperature: Sunny and mild temperature**

Remedy Includes: (Check all that apply)

☐ Landfill cover/containment
☐ Access controls
X Institutional controls
☐ Groundwater pump and treatment
☐ Surface water collection and treatment
☐ Monitored natural attenuation
☐ Groundwater containment
☐ Vertical barrier walls
X Other: **Technical Impracticability waiver; long-term groundwater monitoring**

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager: Remedy does not require any O&M**

_____ _____ _____
Name Title Date

Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____

Problems, suggestions; ☐ Report attached _____

_____

2. **O&M staff** _____ _____ _____
Name Title Date

Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____

Problems, suggestions; ☐ Report attached _____

_____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. **Other interviews** (optional) ☐ Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents: N/A**
   - ☐ O&M manual — ☐ Readily available — ☐ Up to date — ☐ N/A
   - ☐ As-built drawings — ☐ Readily available — ☐ Up to date — ☐ N/A
   - ☐ Maintenance logs — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks_____

2. **Site-Specific Health and Safety Plan** — ☐ Readily available — ☐ Up to date — ☐ N/A
   - ☐ Contingency plan/emergency response plan — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks_____

3. **O&M and OSHA Training Records** — ☐ Readily available — ☐ Up to date — **X** N/A

   Remarks_____

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — ☐ N/A
   - ☐ Effluent discharge — ☐ Readily available — ☐ Up to date — ☐ N/A
   - ☐ Waste disposal, POTW — ☐ Readily available — ☐ Up to date — ☐ N/A
   - ☐ Other permits_____ — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks_____

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — **X** N/A

   Remarks_____

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — **X** N/A

   Remarks_____

7. **Groundwater Monitoring Records** — **X** Readily available — ☐ Up to date — ☐ N/A

   Remarks_____

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — **X** N/A

   Remarks_____

9. **Discharge Compliance Records**
   - ☐ Air — ☐ Readily available — ☐ Up to date — **X** N/A
   - ☐ Water (effluent) — ☐ Readily available — ☐ Up to date — **X** N/A

   Remarks_____

10. **Daily Access/Security Logs** — ☐ Readily available — ☐ Up to date — **X** N/A

    Remarks_____

IV. O&M COSTS: N/A

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____
_____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate_____ ☐ Breakdown attached

Total annual cost by year for review period if available

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost
From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost
From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost
From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost
From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____
_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS **X** Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☐ N/A

Remarks_____
_____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks_____
_____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes **X** No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes **X** No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by): **Settling Defendants submit an annual report to verify that institutional controls remain in place and in effect**
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date **X** Yes ☐ No ☐ N/A
Reports are verified by the lead agency **X** Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met **X** Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No **X** N/A
Other problems or suggestions: ☐ Report attached
_____
_____
_____
_____

2. **Adequacy** **X** ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map **X** No vandalism evident
Remarks_____
_____

2. **Land use changes on site:** **X** N/A
Remarks: **No land use changes since previous five-year review**
_____

3. **Land use changes off site** : **X**N/A
Remarks: **Zoning remains unchanged; Rural Conservation.**
_____
_____

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable **X** N/A

1. **Roads damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A
Remarks_____
_____

B. Other Site Conditions

Remarks

VII. LANDFILL COVERS ☐ Applicable **X** N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
   Remarks_____
   _____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
   Areal extent_____ Height_____
   Remarks_____
   _____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____
_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability
Areal extent_____
Remarks_____
_____

B. Benches ☐ Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks_____
_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks_____
_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks_____
_____

C. Letdown Channels ☐ Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____
_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____
_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____
_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____
_____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A
Remarks_____
_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks_____
   _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks_____
   _____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident
   Remarks_____
   _____

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____
   _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks_____
   _____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks_____
   _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable **X** N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____
   _____

IX. GROUNDWATER/SURFACE WATER REMEDIES **X** Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable **X** N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____
   _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable **X** N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks_____
   _____

C. Treatment System ☐ Applicable **X** N/A

1. **Treatment Train** (Check components that apply)
   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   ☐ Air stripping ☐ Carbon adsorbers
   ☐ Filters_____
   ☐ Additive (*e.g.*, chelation agent, flocculent)_____
   ☐ Others_____
   ☐ Good condition ☐ Needs Maintenance
   ☐ Sampling ports properly marked and functional
   ☐ Sampling/maintenance log displayed and up to date
   ☐ Equipment properly identified
   ☐ Quantity of groundwater treated annually_____
   ☐ Quantity of surface water treated annually_____
   Remarks_____
   _____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☐ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

3. **Tanks, Vaults, Storage Vessels**
   ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   Remarks_____
   _____

4. **Discharge Structure and Appurtenances**
   ☐ N/A ☐ Good condition ☐ Needs Maintenance
   Remarks_____
   _____

5. **Treatment Building(s)**
   ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
   ☐ Chemicals and equipment properly stored
   Remarks_____
   _____

6. **Monitoring Wells** (pump and treatment remedy)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ All required wells located ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

D. Monitoring Data

1.01_ Monitoring Data
X Is routinely submitted on time **X** Is of acceptable quality

1.02_ Monitoring data suggests:
X Groundwater plume is effectively contained **X** Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ All required wells located ☐ Needs Maintenance **X** N/A
   Remarks_____
   _____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The Remedial Action Objectives were to eliminate or minimize the threat posed to human health and the environment by preventing exposure to groundwater contaminants; prevent the migration of groundwater contamination beyond its current extent; and if technically practicable, to restore contaminated groundwater to drinking water standards.

The first two RAOs have been attained. Institutional controls have been recorded and have prevented exposure to site groundwater, thereby ensuring the Site remains protective of human health.. Groundwater monitoring within the TI Zone has shown gradual reductions in concentrations of contaminants. Groundwater monitoring beneath and outside the TI zone has demonstrated that there continues to be no migration outside the TI Zone or the Site. The 1995 ROD included a TI waiver, acknowledging that the third RAO would not be attained within a reasonable timeframe.

_____

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

N/A, no O&M was required in the 1995 ROD.

C.	Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

No indications of potential remedy problems were observed during the site inspection, nor have any been reported in monitoring reports, nor in communications from the Settling Defendants.

D.	Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

VT ANR is the lead agency and will continue to track the long-term monitoring plan and make adjustments when appropriate.

SITE INSPECTION PHOTOGRAPHS

Photo 1: Representatives of VT ANR and Settling Defendants walking up toward Disposal Area where waste was released. Monitoring wells ERM-4S and MW-105M are on the right.

Photo 2: MW-112U and MW-112M. Site inspection occurred during spring sampling event.

Photo 3: Disposal Area. An area encompassing about 900 square feet

Photo 4: Looking southerly toward Fire Pond from the upper area of the TI Zone

Photo 5: Looking southerly toward manufacturing facility from the former Concrete Pad location

Photo 6: Looking southerly toward Fire Pond; MW-104U and MW-104M in foreground

Photo 7: Northeastern corner of manufacturing building. Concrete Area Pad plume flows beneath this portion of the building. Note the air vents

Photo 8: Looking easterly; monitoring wells south of Fire Pond. Note standing water in foreground from flowing artesian conditions.